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ABSTRACT

The Center for the Study of Evaluation Systems Project focuses on assessing the costs and impacts of managing testing, evaluation, and instructional (T/E/I) systems through a collection of nine papers: (1) "School District Evaluation Offices: Are They Worth the Money?," by Richard C. Williams and Pam McGranahan; (2) "How Two Evaluation Offices Help Improve School Performance," by Larry Crabbe, Theron Swainston, and Williams; (3) "School District Use of Testing and Evaluation for Instructional Decision Making: A Beginning," by Adrianne Bank and Williams; (4) "School Districts in the Information Society: The Emergence of Instructional Information Systems," by Bank and Williams; (5) "The Important District Role in Educational Reform," by Williams and Bank; (6) "The District Role in Introducing Micro-Computers: A Contingency Approach," by Williams, Bank, and Carol Thomas; (7) "The Cost of Instructional Information Systems: Results from Two Studies," by James Catterall; (8) "Linking Testing with Instructional Decision Making: Models and Guidelines from Research," by Don Dorr-Bremme; and (9) "The Search for Consequences: Assessing the Impact of District Instructional Information Systems," by Williams and Bank. (PN)

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EVALUATION SYSTEMS PROJECT

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Assessing the Costs and Impacts of Managing T/E/I Systems: A Collection of Nine Papers

Adrianne Bank and Richard C. Williams

Project Directors

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Center for the Study of Evaluation
Graduate School of Education
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TABLE OF CONTENTS

		Publication status	Page
Richard C. Williams & Pam McGranahan	School District Evaluation Offices: Are They Worth the Money?	The Executive Educator In press	1
Larry Crabbe, Theron Swainston, & Richard C. Williams	How Two Evaluation Offices Help Improve School Performance	The Executive Educator In press	8
Adrianne Bank & Richard C. Williams	School District Use of Testing and Evaluation for Instructional Decision Making: A Beginning	Evaluation and Program Planning In Review	17
Adrianne Bank & Richard C. Williams	School Districts in the Information Society: The Emergence of Instructional Information Systems	Administrator's Notebook In Review	35
Richard C. Williams & Adrianne Bank	The Important District Role In Educational Reform	Educational Leadership Submitted	50
Richard C. Williams, Adrianne Bank, & Carol Thomas	The District Role in Introducing Micro-Computers: A Contingency Approach	Educational Technology Submitted	66
James Catterall	The Cost of Instructional Information Systems: Results from Two Studies	New Directions for Program Evaluation Submitted	89
Don Dorr-Bremme	Linking Testing With Instructional Decision Making: Models and Guidelines from Research	Administrative Science Quarterly To be submitted	111
Richard C. Williams & Adrianne Bank	The Search for Consequences: Assessing the Impact of District Instructional Information Systems	Educational Evaluation and Policy Analysis To be submitted	155

APPENDIX 195

SCHOOL DISTRICT EVALUATION OFFICES: ARE THEY WORTH THE MONEY?

by

Richard C. Williams and Pamela McGranahan

Introduction

It now seems clear that the era of federal support of school district education programs is drawing to a rapid close. Such programs as hot lunches, bilingual programs, and ESEA Title IV, to name a few, are either being cut back drastically or being eliminated altogether. At the same time, federal policy is moving toward block grants, which means that money will be funneled through the state educational agencies to the school districts; and school districts will have considerable discretion in determining how and when such funds will be spent.

These basic changes in federal support and policy will have serious ramifications for school districts and their clients. School districts will likely be faced with considerable turmoil as they struggle to sort out the claims various constituent groups will make on an ever shrinking budget of discretionary funds.

While attention has been focused on some of the obvious implications of this change, the fate of school district evaluation offices has received little attention. In most districts these evaluation units have either developed or grown directly as a result of federal and state educational policy. Most such programs carried a provision that continued funding would depend in part on the district's providing evaluation reports that showed evidence that the programs were being administered according to established policy and that the programs were achieving desired goals.

While some districts were able to meet these evaluation requirements by hiring external evaluators, many districts eventually "pooled" the evaluation funds from the many projects into a district evaluation unit. In some instances these units were combined with already extant district testing offices. Parallel to school districts' developing these offices was the development of evaluation as a separate field of research and inquiry. A federally-funded Center for the Study of Evaluation was established at UCLA, many universities developed evaluator training programs, special evaluation journals and associations were started. Evaluation became a commonplace phenomenon in many school districts and an established field of study.

The Problem

The questions that are, or will be, facing many school district administrators and boards are, "What shall we do with the district evaluation unit now that block grant funding no longer mandates specific evaluation? Should we use scarce resources to continue an evaluation office. Do the benefits of such offices justify the costs?"

There is considerable evidence that in many school districts, evaluation units have never played a very significant role in local school district decision making, in spite of their potential to do so. CSE-sponsored survey research and case studies of school district evaluation offices suggest that in many districts, evaluation offices have mainly collected and reported data to external funding agencies. In other districts, evaluation offices have disseminated much data, particularly testing data, within the district; rarely has anyone in the district, however, correlated the data with instructional activities, so that data-based instructional changes are made.

Does this mean most districts should drop or cut back their evaluation offices? Not necessarily! A decision to cut back evaluation units, while perhaps justified in some instances, might be shortsighted for three reasons:

1) the evaluation unit's past activities and perceived limited impact may not accurately predict the evaluation unit's decision-informing potential. Indeed, there may be understandable reasons why the present evaluation unit has been limited in its scope, such as lack of funding or overwhelming dictates from external funding agencies that have severely curtailed the unit's choice of activities or direction.
2) There is evidence that the field of evaluation is developing in such a way that evaluation research can become a genuinely valuable decision-making tool for local school district boards, administrators, and teachers.
3) There seems to be increased administrative understanding of how evaluative information can be used to serve district needs. Administrators are using evaluation information in such diverse ways as: justification of budget requests; explanations to the public and parents about what is going on; input into decisions about text adoptions; staff development; and local school planning.

There are several reasons why evaluation may be more useful to school districts in the future than it has been in the past. One is essentially technical -- that is, the state of the art and the cost of computers and related software has undergone a virtual revolution. School districts can now have available at an increasingly reasonable cost computer terminals at

local school sites. These terminals provide educators, teachers and principals with an enormous tool for having readily available data relevant to administrative and institutional decision making. The evaluation unit can play a vital role in gathering, analyzing and displaying data for school site and district decision makers.

A related development has been the maturing of the evaluation field itself. In its early years, the field was largely preoccupied with evaluation design and related methodologies. After considerable progress had been made on that front, evaluation specialists began increasingly turning their attention to the question of evaluation utilization. That is, they realized that even the best designed evaluations are worthless if no one uses them. Recent attention has been directed at developing evaluations and designing district evaluation activities and processes in such a way that they can be of maximum use to district decision makers at all levels. What is more, a number of school districts have designed evaluation activities and procedures that have resulted in the evalution units being directly integrated into school district decision-making activities. In such districts, the evaluation units have begun to fulfill a management information system potential.

A Basis for Decision

We suggest that as school districts begin the process of deciding what to do about these evaluation offices, they not make such decisions hastily or simply on the basis of past experience. Instead we suggest that as districts face this decision regarding their evaluation unit, they begin a multi-level inquiry into the unit's past performance and future potential.

Such an inquiry might include:

1) Reviewing the unit's past work

The evaluation unit, or an independent agency, could present a review of the work the unit has completed over some period of time, such as the past five years, asking such questions as: what data have they collected and analyzed; what evaluations have they completed: what, in the evaluation unit's view, has been the impact of their work; what evidence is there that the work has contributed to informing decisions; why was the work done -- to satisfy external requirements, in-district requests, or at the office's instigation? A part of this review should consist of a survey of district staff (e.g., central administrators, site administrators, and teachers) asking their perceptions of the evaluation unit. How efficient and effective has the office been? What use, if any, have these various constituent groups made of the evaluation unit's work and reports?

2) Identification of work the unit and its clients want the unit to perform

Evaluation office personnel could describe the work and the kinds of evaluation reports they would most like to develop, including estimates of district capacities (such as money, expertise, computers) for doing the work. This could include a skills analysis of the people in the office, describing their strengths and knowledge in the areas of data collection, analysis, presentation, and interpersonal skills. Also, the district staff could contact other

districts and learn about the kinds of functions and services being provided.

The evaluation office's various constitutent groups could identify the work and kinds of reports they would really like to be available and why.

3) Establishing joint priorities

Representatives of the evaluation office and the various constituent groups could meet together to analyze what the office has been doing, and what it could be doing differently. Together, the group could clarify perceptions, establish priorities, and develop a list of potential, high priority activities.

4) Developing a plan of action

The evaluation unit could be asked to develop a plan to describe potential implementation of the previously agreed upon activities and products. An integral part of the development plan should be descriptions of ways that utilization of data generated from the office will be fostered. At this point it would be useful to the office, if necessary, to explore programs and procedures that have been developed in other districts to achieve similar goals. Such activities would probably have to be modified to meet specific local conditions, but there is no reason to start from scratch in such activities as: developing a criterion-referenced testing program, developing an instructional continuum, developing evaluation reporting formats that are easily read and understood by local school site educators or parent advisory committees, or in

developing inservice training programs that will increase staff understanding and use of evaluations and test results.

If this process was used, appropriate district decision makers would have some basis upon which to make a decision about the future directions of the evaluation office that is more logically and fully developed than by simply extrapolating from past experiences. Such decisions are difficult in these times of shrinking budgets. But district evaluation offices can play an important role in district administrative and instructional management. We urge districts to take a careful and fully informed look at their units, and explore their potential use to the district.

HOW TWO EVALUATION OFFICES HELP IMPROVE SCHOOL PERFORMANCE

by

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Introduction

The argument presented in the preceding article ([reference to journal article]) can easily be dismissed as some academicians' ideological dreams. After all, school districts have managed, for decades, to survive without extensively utilizing evaluation offices. But increasingly, the public and school staffs want to do more than merely survive. They want to develop really effective instructional programs. We believe that testing and evaluation, when considered as part of an instructional management information system, can play an important role in a district's instructional improvement efforts.

Below, we describe two school districts' instructional improvement porgrams in Clark County, Nevada and San Juan, California, and discuss the key role testing and evaluation units have played in these districts' efforts.

Clark County School District, Las Vegas, Nevada

In 1981, the Clark County School District, Las Vegas, Nevada, was the nation's twenty-second largest district; from 1971 to 1981 it showed the highest population growth rate of the fifty largest districts. In order for board members and administrators to supervise and operate such a large district's instructional program, they must have extensive knowledge of what is happening in schools in relation to what should happen. It is in this context that the evaluation office (Research and Development Department) in Clark County has had special meaning and value.

In the late 1960's, the district evaluation staff's role was quite peripheral, probably typical of what one would find in many school districts. They spent most of their time and resources generating data and evaluation reports about federally subsidized programs. These reports, while generally well done, were intended largely for external funding agencies; they were seldom used for internal district instructional improvement.

In the early 1970's some district administrators realized that the instructional program had become deficient. There was very little consistency in curriculum and instructional practice from school to school; the district's standardized test scores were nearly all below the 50th percentile, with many in the 20's.

Some urged the district to begin developing a comprehensive school instructional management and accountability system. The resulting plan was built on three basic components:

1) specific instructional and curricular goals and objectives must be clearly written and widely communicated;

2) methods for measuring whether or not instructional objectives were attained must be devised;

3) program improvement decisions should be based in part on assessment data.

The Research and Development Staff played an important role in designing and implementing these components.

First, the district established a set of instructional objectives, with accompanying evaluative criteria ("What should be"). These ranged in scope from simple math skills in the Kindergarten Curriculum Guide to annual priority goals adopted by the Board. At the school level, the heart of this component was a set of objectives and standards for school operation known as Elements of Quality.

The second component consisted of both formative and summative measures of the extent to which stated objectives were achieved ("What is"). The evaluation staff administered norm-referenced (nationally standardized) tests in grades 3, 6, 8, and 11 and was integral in developing criterion-referenced tests (CRT's) to measure basic skill subjects in grades 1-8. Three forms were developed:

- one CRT was a general placement test administered at the beginning of the school year;
- another CRT was a series of diagnostic instruments used to identify students' specific learning needs;
- another CRT was an end-of-year measure of mastery of specific instructional objectives.

The evaluation staff also developed structured surveys of parent, student, teacher, and principal opinions and devised methods for directly observing instructional practices and student behavior.

The system's third component addressed the ultimate challenge of any data-based instructional improvement, namely, how to reduce the difference between "What should be" and "What is".

Utilizing testing and evaluation data, teachers, administrators, and the school board compared "What is" with "What should be," and decided upon high priority and realistically attainable objectives and activities which offered the greatest likelihood for instructional improvement. These included: developing a teacher inservice training program, improving the principals' clinical supervision skills, and devising a supervisory system that insured that instructional improvement was a top priority at all district levels.

Since implementing this system, measured student acheivement in basic reading and math through the eighth grade has increased approximately 20 percentile points. While exact causality is difficult to determine, we believe the program has contributed greatly to this measured growth in pupil achievement.

The district's teachers, administrators, and board members now have a better control of our instructional destiny. In addition to a carefully developed instructional improvement program, we have a data-base of systematically collected and analyzed test results and evaluation reports that help us in identifying problems and determining solutions. This program could not exist without a capable evaluation staff that has and

continues to provide leadership and assistance at all stages of the process.

San Juan Unified School District, California

In 1971, the San Juan Unified School District was like most school districts in the way it handled the evaluation of its ESEA Title I programs. The development of a single annual program plan and year-end evaluation report was the focus of its attention. These documents were faithfully submitted to the appropriate governmental agencies. However, the value of these evaluation activities to those at the site level was exceedingly limited.

A number of us, including many at the site level, believed that a greater return would be obtained if planning were shifted to the school level. In 1972, we received an additional incentive. The Early Childhood Education program became law and with it a mandate for site-level planning and evaluation. The law also created site advisory committees to carry out these activities.

The district began developing a site centered evaluation/planning model to help make school level planning a reality. The special projects evaluation unit (consisting of one specialist) assumed the responsibility for its development.

The first task was to define a school site planning process. The result was a six-step school site planning procedure:

(1) recognizing the problems that exist;

(2) determining their causes;

(3) selecting alternative solutions;

(4) selecting the best alternative(s);

(5) implementing the selected alternative(s);

(6) measuring its impact or success.

Most critical to the success of our model was the belief that evaluation and planning must be closely linked. Several additional factors were (and are) considered to be important to the success of the model as well:

- it must provide data that are important to the planner -- not only data of interest to evaluators;
- the reporting format must be such that the meaning of the data is clarified rather than confused;
- the report must fit into the planner's decision-making time cycle -- well in advance of the decision deadlines.

An important district concern had to do with who was to participate in the school site evaluation and planning process. In order to maximize ownership and commitment the school planning councils were organized to include parents, teachers, and (in secondary schools) students.

Working with school site council members, the district identified the data needed to make enlightened site decision making possible. Some of the data related to achievement as measured by norm-referenced tests; other data had to do with the opinions of significant groups (i.e., staff, parents, and students) toward their school's program and progress. To

provide these data, the district developed the instruments of the Educational Program Assessment model. Its surveys contain items common to all schools as well as an opportunity for each school to add questions tailored to its needs. Data from the EPA instruments, norm-referenced tests, and a variety of other sources provide a rich base upon which to plan.

School site councils can, however, drown in floods of data. What is more, even if such data are understood, their implications for planning purposes are often murky. Several steps were taken to address this problem. First, we devised a procedure that reduced 300 test printouts down to six school profiles that graphically point out school performance and problem areas. These profiles include the information for six years, five grades, and six subtest areas. We arranged the data in order to facilitate comparisons between the various grades and years. The results of the EPA instruments were also produced in a concise graphic format.

To make site decision making more manageable, we divided the members of each school site committee into small groups, each completing the six steps of the planning process for a particular area of the curriculum.

Finally, we entered each completed school site plan and budget into a district word-processing system to enable school sites to modify their plans and monitor their budgetary status throughout the school year. This has greatly reduced the amount of paperwork at each school site.

As a result of these efforts, school advisory councils are no longer merely "rubber stamps." They now have the data and the means by which to make informed planning decisions and to assess, from year to year, whether or not the resulting program has produced the desired results.

It has taken the district about eight years to devise this system. (We have, unfortunately, not been able to discuss all of its components here.) Many parents, teachers and administrators have helped to think through its problems and solutions. They have been active participants throughout the model's evolution. We are now enjoying the results of our efforts. School site councils report an ability to play an important role in determining the destiny of their schools. They have a way to "stay on top" of things and to learn of the outcomes of previous decisions. Needed program adjustments can readily be made. It is rewarding to view the skill and confidence with which local staffs and parents fulfill their planning responsibilities. Communication and mutual support between school and community have, in many instances, never been better. Most importantly, our students' educational achievement appears to be steadily improving.

We are not devising a system to utilize individual site data for districtwide planning and evaluation purposes. If successful, our site level information will also satisfy district needs with no additional data collection burden to schools. We can, then, better coordinate school-level planning activities with those which are best conducted at the district level.

It is our belief that the entire planning/evaluation process could not take place (especially in large districts) without a well trained evaluation staff that views the facilitation of effective and efficient site-level planning as its highest calling.

Conclusion

In comparing these two districts, one sees important differences and similarities. One difference is that curricular and instructional decision

making takes place at different locales. While both consider instruction an important district repsonsibility, Clark County uses a more centralized approach which stresses a set of commonly agreed-upon objectives and instructional methods in all schools; San Juan emphasizes more local school site decision making which reflects the school site council's interpretation of local conditions and needs. Both approaches are effective; testing and evaluation systems can serve multiple approaches.

The systems are similar in that both have transformed a procedure that made minimal use of testing and evaluation data to one that makes such data a vital part of the instructional decision making. As "pioneering" districts in their efforts, it took each about eight years to develop, perfect, and install its program. While these districts' exact programs will not likely work equally well in other districts, the programs and their component parts can provide a foundation of ideas and procedures that can be used by other districts that are interested in utilizing testing and evaluation data as district instructional resources.

SCHOOL DISTRICT USE OF TESTING AND EVALUATION FOR INSTRUCTIONAL DECISION MAKING: A BEGINNING*

Adrianne Bank and Richard C. Williams

During this decade of the '80's, educational organizations -- like profit-making and governmental organizations -- are experiencing considerable stress. School systems are being asked to respond to demands for increased excellence in educational quality while their financial resources are declining. If educators are to secure the funds necessary to meet the diverse needs of a heterogeneous, mobile student population and to raise the low status and low salaries of teachers, and administrators they are going to have to devise ways to more actively and effectively manage their instructional programs and then let the public know about it. An important ingredient in this process is information for teachers, principals, and the public about the effects of the instructional program and discussion concerning the implications for action.

School district offices currently obtain a great deal of information about student achievement. They also know some details about the operation of their instructional programs. Over the recent past the districts' human and technical capacity to collect data about students and programs has been enlarged by federal and local need-to-know reports concerning the outcomes of funded programs. Most large districts now have research and development offices. Many districts routinely administer standardized, norm-referenced, criterion-referenced tests, and proficiency tests. Many districts annually distribute parent, teacher, and student opinionnaires. The

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*Presented at the symposium: Local level evaluation: The state of practice in health, housing, education and urban services. Evaluation Network/Evaluation Research Society, Baltimore, Maryland, 1982.

use to which this data is put, however, varies widely from district to district. Some districts largely report the data to external funding agencies; other districts utilize the data for internal district instructional decision making.

For the past three years, the authors have been conducting NIE sponsored field research at UCLA's Center for the Study of Evaluation in order to understand what distinguishes districts who make internal, system-wide instructionally-oriented use of student test scores or other evaluative data from those districts who use mandated tests scores and evaluation reports primarily to comply with federal and state requirements.

We are aware of the numerous technical difficulties related to developing test instruments and analyzing test scores as well as the other evaluative data from surveys, classroom observations, etc., in ways that encourage appropriate inferences for instructional policy making. We acknowledge that even when these technical difficulties are overcome, generic organizational characteristics of school districts as organizations make the kind of information-based instructional management systems we have seen in some districts relatively rare occurrences.

However, we have discovered some common conditions in the eight districts we have studied that appear to contribute to their ability to forge systemic linkages between testing and evaluation data on the one hand and instruction on the other. We believe that similar facilitating conditions may exist in other districts, or can be brought into existence, if the motivation is sufficient. Our study districts are in what we have labeled "phase three" in regard to data collection, analysis, and use, that is, the integration of testing and evaluation with instructional decision making

We are not certain at this time if this third phase phenomenon will disappear or whether it marks a beginning of a useful movement in district instructional management.

BACKGROUND

In earlier, simpler -- phase one -- times, teachers used their own made-up tests to motivate students, to determine levels of student achievement in order to provide remedial or enrichment activities for them, and to assign required report card grades. Teachers, autonomous in their classrooms, were responsible for testing students, for evaluating their performance in other ways, and for teaching them. Districts did not require system-wide tests.

During the recent twenty-year history of high levels of federal and state involvement in the formulation and funding of educational programs, teachers continued to use self-developed tests, but district offices began to require additional tests or evaluative record keeping, either on their own initiative, or because of requirements accompanying externally funded categorical programs. Many districts now routinely require the administration of annual or semi-annual standardized tests at three or more grade levels, periodic criterion-referenced tests, proficiency tests, and state assessment tests. About half of the testing occurring in elementary schools in reading and math, and about one quarter of the testing occurring in high school classrooms is initiated by someone other than the classroom teacher (Burry, et al., 1982). Many observers, (David, 1978; Lyon, et al, 1978; Zucker, 1981) point out that, for the most part, test results are sent out of the district to fulfill reporting requirements. Whatever internal use is made of them is likely to be by administrators of the

programs, rather than by teachers or principals. It is our finding as well as those of others (Kennedy, et al., 1981; Alkin, Daillak & White, 1981) that most districts do not relate their district-wide testing and evaluation activities to their ongoing instructional programs. Those districts where district-wide tests are routinely administered or where evaluative record keeping is performed but where test, scores, and evaluative data are rarely scrutinized for policy or classroom purposes could be said to be in phase two with regard to testing and evaluation activities.

In a small, but growing, number of districts, school boards and administrators have found a way to utilize for internal decision making the information collected by their recently acquired research and evaluation personnel. These boards and administrators have decided, in response to their own, to teachers', and to the public's demands for better pupil achievement that test scores and other data can guide policy and classroom decisions as well as track student performance. These districts, due perhaps to particular circumstances, have developed what we are calling instructional information systems. These systems use information derived from a variety of data sources, e.g., student scores on one or more test formats, parent surveys, demographic trends, to analyze, and perhaps change, instructional programs, including texts, supplementary media or materials; supports or training for teachers; amount of time on specific subjects, etc.

This "phase three" linkage of testing, evaluation, and instruction is characterized by district acknowledgement of system-wide responsibility for student learning and by district confidence that test scores and other evaluation data can be used as planning and assessment tools.

The two questions addressed by this paper are: Why have some, but not other school districts moved towards the development of system-wide linkages between testing and/or evaluation with instruction? What do existing linkages, that is, instructional information systems, look like?

WHY SOME DISTRICTS AND NOT OTHERS?

We have identified several generic characteristics of school districts as complex organizations that tend to keep most of them at phase two, that is, lots of test data collected at district behest, little test data used at district direction to improve the instructional program.

These characteristics predispose district central offices towards short-term reactions to their ever-present and constantly changing problems rather than towards sustained long-term efforts to improve instruction in a cumulative and systemic manner. They also predispose central office research and testing units towards autonomous, in contrast to coordinated functioning. Furthermore, individual teachers or schools assume, implicitly or explicitly, delegated authority for most classroom decisions. Central office responsibility for instruction is limited to inconsequential support and supervision activities. These generic characteristics include:

- rapidly changing environmental conditions. Fluctuations in district budget levels; changes in student population characteristics and distribution within the district; reductions in staffing all make it difficult for district administrators to find the time, resources, or constancy to develop a coordinated instructional improvement effort monitored and guided by information from tests and evaluations.

- boundary permeability. There is a great deal of external societal regulation of districts and schools. Specific laws and regulations, as well as changing and sometimes conflicting community expectations, may dispose district administrators to attend first and foremost to those tasks for which they are legally and politically accountable even if those tasks do not most directly contribute to instructional excellence (Zucker, 1981).
- goal diffuseness. The pluralism and diversity within our society and within any given district may make it difficult for districts to adopt educational goals specific enough to tune tests, texts, instruction to them. In order to avoid offense, educational goals are often stated in ambiguous language.
- weak technical core. Some observers have noted that education's weak technical core -- that is, the small number of credible research-validated cause-effect relationships between student instructional methods and learning outcomes -- encourages educators to use and justify a variety of instructional methods. Arguments have been made (Meyer & Rowan, 1977) that revelation of this weak technical core may be detrimental to a district's public image and therefore administrators leave such decisions to teachers who have the imprimatur of being credentialed.
- loose coupling. A widely held view of the internal operations of public school districts is that the instructional components of the organization, e.g., curriculum department, in-service training, individual classrooms, are loosely coupled (Meyer & Rowan, 1977; Weick, 1976). It follows that the linkage between policy and

management and between management and operations is likely to be weak. Loose coupling within a district may be more pronounced in the complex areas, such as instruction, which are protected from public view than in simpler, but more visible areas like the enforcement of policies relating to corporal punishment. Instructionally, schools and classrooms may be thought of as federations or zones of influences (Lortie, 1975), rather than as places where board or central office policies necessarily are carried out by teachers in classrooms.

In light of these generic conditions, what are the situation-specific elements present in those districts which have developed information-based instructional management systems? The elements can be conceptualized as the interaction between a benign external environment (Pincus & Williams, 1977) and the organization's capacity to respond.

In the districts we studied the thrusts from their many environments, for example, federal, state, local, media, academia, parents, were aligned in the same direction. Conjointly, these pressures pushed the district towards making instructional changes to increase student achievement as reflected in test scores. In addition, it seemed to us that the political, social, and economic situations in our study districts were somewhat less turbulent, somewhat more stable than in other districts where crises seemed continually chronic.

Our study districts were able to respond to the direction suggested by the pressures from the environment because of: the presence of influential "idea champions," and of a stable core of central office personnel, staff

orientation towards comprehensive problem analysis, and an administrative capacity for dealing with ambiguity and delay (Bank & Williams, 1981).

Idea champions were defined as individuals in key administrative and policy positions who firmly believed in some variation of the following position: that classroom instruction could be conceptualized in terms of student learning outcomes, that tests of student learning outcomes and evaluations of instructional activities could be used to relate instruction to learning, and that district policies and procedures should be attentive to this linkage.

Stable core staff meant that a critical mass of teacher and administrative supporters of these ideas had been around for a while. In districts with the most advanced information systems it had taken more than five years for the linkages to develop and mature. A stable core group, with some additions or deletions, seemed to have worked steadily at the process over several years. They were thus able to smooth out the shifts in direction that might have resulted from changes in school board composition, legislation, court orders, funding levels, etc.

Comprehensive rather than ad hoc problem analysis on the part of district managers meant that the core central office staff prepared for next steps beyond the immediate task of the moment. Typically our districts did not develop elaborate, multi-year blueprints of their projected information management activities in advance of action. However, from the beginning they did have a sense of where they were going and the steps that were necessary to get there.

District personnel in our study seemed to have the ability to deal with delay and ambiguity; that is, they were aware of, and accommodated to a strategy for developing an instructional information system that was

uneven, interrupted, and in some cases oft-postponed. Creating arrangements to merge together usually-separated district operations into integrated configurations took time, patience, administrative talents, and adherence to an overall idea rather than to specific details.

WHAT DO INSTRUCTIONAL INFORMATION SYSTEMS LOOK LIKE?

The information systems of the districts we studied varied on a number of dimensions; among them, the purpose of the system, the number of elements which were coordinated, and the locus of decision making.

Here are thumb-nail sketches of two districts which differ substantially on these three dimensions. District A is small and has a centralized, highly coordinated management system, characterized by a district-wide curriculum scope and sequence, district-wide criterion-referenced testing, district-wide staff development activities, clear expectations for principal supervision, classroom supports in the form of learning and media specialists. Its purpose is to provide ongoing information and resources to classroom teachers who then differentiate their instruction to meet individual needs. District B is medium sized, has a decentralized, school-level decision making focus. The district sends out a variety of testing and survey data to help school planning teams do their own resource allocation. The district's purpose is to provide information and support to site teams who then help solve school level problems. The sketches are adapted from district administrators' own accounts.

District A: A Centralized Information System to Monitor and Improve Classroom Instruction

In 1970, the district attempted to meet the need for student progress reporting by purchasing test items to measure a sequence of behavioral

objectives. The objectives themselves turned out to be sequenced differently than those existing in classroom materials. Teachers hated the objectives and the tests and eventually district administration discarded both.

Rather than purchase another available testing system, district administration formed teacher committees to write their own tests. The feeling was that tests written by district teachers would be better received by other teachers than tests developed by an outside agency. In 1973, the first district-developed tests, known as PAL (Pupil Assessed Learning), were ready and administered to students. They were intended to monitor student learning so as to feed back information to teachers about how individualized instruction was working. They also were seen as a way of reassuring parents who were concerned about their children's progress.

Teacher reaction to PAL was extremely negative. Everyone complained. Teachers today remember their complaints: e.g., "It was a waste of time." "It didn't tell us anything we needed to know." "It was not coordinated with anything we taught." Teachers loudly made their feelings known to parents and to the Board. It was a hard time for central office staff who wanted the testing system to work.

The person in charge of developing the system next appointed teacher committees to try to revise the items. Simultaneously, work began on a district level instructional continuum. A group of volunteer teachers were paid to work on a reading continuum during the summer. Their work continued through the school year.

By 1976, teacher committees had generated a reading continuum (RIC) and the beginning of a math continuum (MIC). By 1976, also, the PAL criterion-referenced testing system had been scrapped. Other teacher

committees had written reading, math, and language arts test items to form their own criterion-referenced tests (CRT).

Realizing that a testing program by itself could not improve instructional practices, the central office instituted a staff development program in the early 1970's. Nearly all teachers are trained in a diagnostic-prescriptive approach to teaching. A modified version is provided for substitutes and aides. Other staff development programs discuss individualizing instruction, meeting affective needs, using inquiry skills techniques, and teaching specific curriculum content such as reading, writing, or mathematics.

At the same time as the staff development program was being operationalized, the district office decided to create a new school-based role -- that of a learning specialist whose responsibility was coordinating the newly developed testing system in each of the schools.

The district claims that their testing system holds the curriculum, the texts, the staff development, the teacher supervision together. The R&D person notes:

- All tests are directly linked to a kindergarten through eighth grade instructional continuum for reading, language arts, and mathematics.
- All tests are computer-scored. Results are formatted in easy-to-read specially tailored reports to teachers, parents, and site and district administrators.
- Results are reviewed and appropriate actions to remediate children not performing well are immediately undertaken and communicated to everyone concerned.
- The tests are reviewed on an ongoing basis with revisions occurring four times over the last several years.

District B: A Decentralized Information System to Improve Schools

"Our evaluation/planning model is one which takes place where the action is, at the school-site level. It involves those with high stakes in its outcome, namely, the school's staff, students and parents. Significantly, our model is one which begins with a broad data base. Most importantly, it goes on serving throughout the school year, long after the formal process of planning has been concluded."

Throughout the evolution of their evaluation/planning model, this district has held to several fundamental beliefs as to the reasons for evaluation and planning. They believe that an evaluation and planning model would deliver the greatest "payoff" to the district's schools if these are its primary goals:

- to improve the quality of the local educational program;
- to encourage the most effective or efficient use of scarce financial resources;
- to assist with the attainment of the goals of the school, the school district, and the special program(s) mandating the evaluation/planning activities.

Ten years ago, when the Evaluation Specialist position was created, the district had six elementary schools in its Title I program. School personnel continually asked that they be allowed to create their own program plans suited to the uniquenesses of their individual school sites. Serious doubt was often expressed by federal or state administrators with regard to the ability of local school sites to accomplish such a task.

However, in 1971, the legislature passed a bill authorizing the Early Childhood Education (ECE) program and, with it, a framework for evaluation and planning at the school level. The California State Department of Education developed the evaluation/planning model as the planning format.

The creation of the ECE program prompted the district itself to develop its own participatory evaluation/planning model to be based on a broad needs assessment process. Their efforts were shaped by the state's process and forms.

The earliest versions of the staff, parent, and student needs assessment survey instruments came to be widely known as the Educational Program Assessment (EPA) process. Since its creation, the ongoing work on the EPA instruments involved large numbers of parents, staff, administrators, and secondary students. This has provided district staff with a unique opportunity to test out their theories regarding the beneficial effects of involvement on school and on community feelings of ownership and support for such processes.

> "We believe that broad school and community involvement has contributed to responsive instruments. These, in turn, have led to high response rates, averaging about 70 percent and rising to an unbelievable high of 100 percent response from one school and its community."

While surveys of needs assessment responses provide a large amount of information for evaluation and planning, the primary source of the school district's evidence about student achievement is the Iowa Test of Basic Skills.

The evaluation/planning process takes people through a six-step problem solving sequence at the school-community level. Evaluation and planning activities take place under the patronage of the School Site Council, a body whose composition and influence has grown out of the California School Improvement Program (SIP) legislation. This committee, with the site administrator, represents each of the major constituencies within school-community (i.e., parents, staff, administrators, and secondary students).

For planning purposes, the school's curriculum is typically (although not always) separated into academic components, such as reading, language, mathematics, etc. The School Site Council usually creates "component committees" of parents, staff members, and students (in secondary schools) to do evaluation and planning for each academic area. The final school program plan has sections addressing each component written by the separate committees.

At the outset, each component committee tries to define its area of the curriculum comprehensively, to ensure that all sub-areas are addressed in the evaluation/planning process. The members of the component committees examine their information to identify the strengths and weaknesses of their students. With this step complete, the component committees turn their attention to the existing programs. In those areas where student performance has been found to be unsatisfactory, an effort is made to identify probable program causes, that is, program gaps or weaknesses which, if eliminated, would result in improved student performance.

Then, the School Site Council does a component-by-component review of all aspects of the proposed program after an anticipated projected cost has been attached to each proposed expenditure. Through negotiation and compromise, the activities of lowest priority, along with their related costs, will be reduced or eliminated to the point where the amount which the school proposes to spend will exactly equal the amount which it expects to receive.

HOW DO INSTRUCTIONAL INFORMATION SYSTEMS VARY?

Purpose of System. In the two districts described above, the purpose of one instructional information system was to tailor classroom instruction

to individual student needs, of the other to improve school functioning. Some of our other study districts have more narrowly defined the purpose of their instructional information system as to raise the average of the district's test scores. Other districts defined the purpose of their instructional information system as monitoring teacher behavior. Their idea was to assert district responsibility for instruction by mandating a particular instructional strategy and then tracking the effects of that strategy by test score analysis.

Extent of Administrative Coordination. Our eight districts differed from one another in the complexity of their coordination arrangements at the central office level. Usually autonomous district functions which were linked in formal or informal arrangements included: staff development, instructional materials (texts and adjunct materials), testing and evaluation, supervision of principals, curriculum development. Coordination was carried out by some or all of the following: informal personal links among a few people; formal, inter-organizational reporting arrangements among units or departments; on an ad hoc or routine basis, central office staff and principals' discussion of district-wide and school site implications of data analysis.

Locus of Decision-making

The foregoing discussion of variations in purpose and in coordinating arrangements alluded to a number of organizational levels at which decisions were made about translating the analyses of test scores into changes in instructional activities. Districts differed from one another in the nature of the decisions which were made at the central office level, at the school level, or the classroom level. The following list indicates the range of activities we found at each level.

CENTRAL OFFICE decision-making consisted of one or more of the following:

- district-level construction of grade-level objectives by subject areas
- district-level construction of criterion-referenced tests
- district-wide selection and use of a norm-referenced test
- district-wide evaluation of instruction through classroom visits, surveys, etc., of instructional efforts
- district-wide formulation and conduct of staff development programs
- district-wide selection of texts to match tests

SCHOOL LEVEL decision-making consisted of one or more of the following:

- school-level planning teams, teacher/parent/community
- school-level receipt of information about student outcomes from either teacher-created tests, teacher-option CRT's, district-wide mandated CRT's; district-wide norm-referenced tests
- school-level conduct of instructional evaluation via supervision, teacher self-reports, district evaluations, outside evaluations
- school-level planning for school-year activities
- school-level allocation of services, both personal and financial, to support local plans
- school-level decisions about texts

CLASSROOM LEVEL decision-making consisted of one or more of the following:

- individual teacher receipt of information about student learning, e.g., norm-referenced test scores, CRT's, teacher observations, text tests, student assignments, etc.
- individual teacher decisions about grouping, remediation, enrichment, alternative instruction, etc.
- individual teacher participation in professional development activities

CONCLUSIONS

We have come to some tentative conclusions about testing, evaluation and instruction in "phase three" districts.

1. Building an instructional information management system can be done in districts. It is, however, difficult to do, requires a specific set of advantageous circumstances, and takes time.

2. There are many yet unanswered questions about such systems. For example, what do they cost? What are their negative as well as positive consequences? Are they worth doing? Can the pace of the development process be accelerated?

3. There is no single method or design which districts have used in developing their systems. Whether such systems are uniquely configured due to the specifics of community priorities, history of the district, personal biases of the "idea champions" or, on the other hand, because the state-of-the-art of instructional information systems is so underdeveloped, we do not yet know. We do know that there is much district interest in the use of information to guide instructional decision making; we suggest that the topic of instructional information systems be added to the agenda of researchers and practitioners interested in practical district-level supports for effective instruction.

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SCHOOL DISTRICTS IN THE INFORMATION SOCIETY: THE EMERGENCE OF INSTRUCTIONAL INFORMATION SYSTEMS

by

Adrianne Bank and Richard C. Williams

Even the most casual observer of modern day America will have noticed the breathtaking pace at which microcomputers are being introduced into our work places and homes. This phenomenon marks an important milestone in the journey from an industrial society to the much heralded information society.

This transition to an information society has tremendous implications for everyone -- at home, in the office, on vacation, or in school. To date, the educational implications of the technology explosion have received considerable attention as various pundits have tried to predict the impact the computer will have on classroom instruction, on curriculum development and, indeed, on the very structure and purpose of schooling itself.

In this article we want to describe yet another dimension of ways in which the emerging information society might impact on schools, namely, how school districts can begin more effectively to integrate information into their instructional decision-making systems.

During the past three years at UCLA's Center for the Study of Evaluation, we have investigated ways in which a number of school districts have tried to link their testing programs and evaluation/research activities with instructional decision making. Our work has included case studies in eight districts that had a reputation for having forged some kind of testing-evaluation-instruction linkage. In addition we have reviewed

and synthesized the theoretical and research literature in several related fields such as school administration, testing, evaluation, decision making, and management information systems.

Surveys and field work (Lyon et al, 1978; Bank, Williams & Burry, 1981) have revealed that most school districts already collect considerable amounts of data with potential value for instructional decision making. However, these data often remain as unused resources because they are not analyzed or reported in a way that is useful for instructional decision making at the classroom, school building, or district level.

In our eight districts, we have observed attempts to create useful data storage, retrieval, and reporting systems. These we have called instructional information systems (IIS) to suggest a partial analogy with management information systems (MIS). As a contribution toward further understanding what instructional information systems might do, we will, in this article:

1. define what we mean by an instructional information system (IIS);
2. identify and describe the components of a district instructional information system;
3. provide a brief description of three different instructional information systems that presently operate in districts;
4. suggest a direction for a school district instructional information system that is compatible with its organizational context and avoids some common errors that sometimes plague management information systems.

Before embarking on these three topics, let us first share what we observed across our sample districts as common elements in the development and evolution of existing school district instructional information systems. These elements seemed to distinguish these districts from other districts which collected data, e.g., test scores, but did not make instructional use of them:

- a stable external environmental setting;
- within-district presence of "idea champions" and a critical mass of long-term supporters;
- the availability of sufficient resources, both fiscal and technical, over a relatively long period of time -- six to eight years in many cases (Williams & Bank, 1981).

Another striking element which appeared to characterize our eight districts was the ad hoc nature of the development of the system. In none of the districts had there been a blueprint or a timeline for developing an instructional information system. Indeed, the term "instructional information system" was not in common use in these districts. Rather, what we observed were individual activities, sometimes formalized in job descriptions but more often informal, which served to combine the collection and analysis of data with a delivery and support system for users at the classroom, school, central office, and board levels concerned with instruction.

Thus, it is important to note that the term "instructional information system" used in the remainder of the paper is a construct which we have used to bound certain types of district-wide activities. This construct suggests that what goes on in school districts which link evaluation, testing, and instruction may bear a partial resemblance to what are termed management information systems in other organizations.

What is a School District Instructional Information System?

In its simplest and most obvious form, an instructional information system is some method by which information of some kind is transmitted to and used by someone or some group in a school district in relation particularly to the content or delivery of instruction. But we want to put more specific limits on such a definition.

The topic of information and its use has been a research subject in its own right. There are over 20,000 titles under the term "information" in the ERIC system (Mansfield, 1983). Human beings are capable of organizing vast amounts of information into patterns which influence their decisions and their actions. This "body of knowledge that administrators and policy makers use spontaneously and routinely in the context of their work . . . - the entire array of beliefs, assumptions, interests and experiences - " has come to be called working knowledge (Kennedy, 1982). Such working knowledge may often interact with -- that is, influence and be influenced by -- formal social science data. It is, however, this latter type of data -- intentionally collected and analyzed in a prescribed and standardized format -- which we are calling "information."

The term "system," like the term "information," is in widespread use, particularly in the literature on organizations. When used here, it does not describe the school district as a whole, but rather refers to a separate subsystem which has its own purposes, organizational structure, staff and linkages to that larger environment.

Instruction is a third broad term which has different meanings depending on context. We use it here to refer specifically to intended interactions within the classroom or school environment that affect student learning. The decisions that affect those interactions -- such as texts, number of aides in the classroom, amount of time to be spent in a subject area, teaching methods -- may be made by boards, committees, principals, teams, or individual teachers. Whoever the decision makers or decision implementers, and whatever the topic under consideration, if it pertains to the schools' shaping of students' learning, we count it as instructional.

As indicated earlier, the term instructional information system was chosen to suggest a rough analogy to management information systems. A management information system has been defined by Walter J. Kennovan (1970) as "an organized method of providing past, present and projection information relating to internal operations and external intelligence. It supports the planning, control and operational functions of an organization by furnishing uniform information in a proper time frame to assist the decision-making process." To parallel this definition, instructional information systems in school districts might be characterized as loosely organized methods of providing to those concerned with instruction past and present information relating to student attainment and program evaluation. Instructional information systems support users' decision making by furnishing them with particular and limited types of information in a time frame and format appropriate to their decision-making processes.

Components of District Instructional Information Systems

As noted earlier, district instructional information systems are rarely conceptualized as such by the people within school and district settings. The five components, which we categorize as "core" components, are terms we derived from the literature on management information systems. To greater or lesser degrees these components were present in all of our sample districts even though they were not always so named by district respondents.

The three additional components which we have labeled as contributory are not part of the description of most management information systems. They were, however, also present to some extent in all eight of our districts. They were there to provide users of the data with guidance and

assistance for making instructionally-related decisions and with support for carrying out those decisions in the central office, in schools, and in classrooms. Central office personnel who had established the systems often noted that these extra-system components were necessary to system maintenance. Without them, they said, it would be likely that principals and teachers would revert to exclusive reliance on working knowledge.

Core components of a district instructional information system:

1. specified users
2. specified uses
3. specified types of information inputs/outputs
4. specified information delivery procedures
5. specified monitoring of system functioning and of system use

Contributory components of district instructional information systems:

6. training for users in data-based decision making and implementation
7. availability of resources to support action planning
8. availability of resources to support implementation

The following is a comprehensive listing of the specific elements included by all eight districts within each component. Since districts varied from one another on the purposes of their instructional information systems, only a small subset of the elements of each component was relevant to a given district. Following this catalogue we will describe three models of instructional information systems on a case study basis.

1. SPECIFIED USERS:

teachers;
principals;
others in schools, such as media and learning specialists, substitutes, aides;
advisory committee members;
parents, media, prospective residents, real estate developers;
central office personnel concerned, for example, with curriculum, supervision, staff development, personnel;
school board members;

These users can be thought of as either direct or secondary users of the system; either regular or episodic users; either active or passive users.

2. SPECIFIED USES:

planning instruction, identification of subject areas in which students' need additional time or attention;
placing, grouping, regrouping of students;
remediating or supplementing students' instruction;
monitoring student progress;
identifying parent, teacher, student, opinions and attitudes;
determining the allocation of school level resources;
identifying school-wide needs;
selecting texts;
establishing school and district image;
communicating with interested others - e.g., federal or state agencies and local organizations;

3. SPECIFIED TYPES OF INFORMATION INPUTS/OUTPUTS:

commercial norm-referenced test and subtest scores;
district-developed criterion-referenced test scores;
proficiency test scores;
state assessment test scores;
demographic and census data;
longitudinal individual student data;
attitude surveys of students, teachers, parents;
records of attendance, transiency, vandalism, etc.;

4. SPECIFIED INFORMATION DELIVERY PROCEDURES:

formats - printouts, written reports, oral reports, graphic presentations, individual and small group briefings;
cycles - periodic, coordinated with other activities, as needed;

5. SPECIFIED MONITORING OF SYSTEM FUNCTIONING AND OF SYSTEM USE:

informal feedback;
ad hoc or standing committees reviewing information inputs, outputs;
records of system use;
supervision of subordinates by superiors, peer review;

6. TRAINING FOR USERS IN DATA-BASED DECISION MAKING AND IMPLEMENTATION:

in asking questions of the data;
in interpreting test scores;
in alternative methods of raising student achievement;
in interpreting survey data;
in understanding implications of trends;

in inferring action alternatives from data;
in deciding among competing alternatives;
in implementing change;

7. AVAILABILITY OF RESOURCES TO SUPPORT ACTION PLANNING:

training for individuals such as media or learning specialists;
budget for release time, substitutes, conference attendance.

8. AVAILABILITY OF RESOURCES TO SUPPORT IMPLEMENTATION:

trained individuals such as media or learning specialists;
budget for release time, substitutes, conference attendance.

Description of Existing Instructional Information Systems

The eight districts in which we did field studies had unique instructional information system configurations. For three of these districts we will utilize our eight components to provide a brief snapshot which will illustrate alternative forms of instructional information systems.

District A: Student Achievement Model

The purpose of this instructional information system is to individualize instruction. The direct users of the system are teachers and principals. Teachers use the test score reports, the output of the system, to plan instruction, to place students in classes, to group and regroup students, to assign remedial or supplementary materials, to communicate with parents. Prinicpals use the reports to monitor individual and group progress of students, to review teacher activities, to communicate with parents, and to share with one another estimates of school progress so that district policy making can be informed by principal input.

The type of data which the system collects and analyzes are students' criterion-referenced test responses. These criterion-referenced tests are keyed to a grade-by-grade district curriculum in math, reading, language

arts. The tests are administered by teachers on a quarterly basis. Scores are reported by objective, by student, by reading group, by class, by grade level, and by school. Turn-around time from test administration to teacher receipt of printout is approximately a week. The format of the instructional information system's output is a computer printout and it is delivered to teachers by mail.

In this district, there are many ways to monitor system functioning and system use. Learning specialists in each school make sure that the tests are distributed, administered, and correctly processed. These learning specialists also assist teachers in analyzing and interpreting the scores and in making instructional plans based on these interpretations. The principals review all test scores, hold conferences with teachers during the year to discuss individual children, use the previous year's scores in making plans for the subsequent school year. Both teachers and principals use the criterion-referenced tests and the objectives to which they are indexed in conferences with parents and in between-conference reporting of student progress.

As for the contributing components of the instructional information sytem: The learning specialist in each school trains teachers in the interpretation of the test scores and in specific action planning and implementation activities. The criterion-referenced testing and curriculum coordination is supported by an elaborate multi-level professional development program (PDP). In this program, teachers are required to attend courses where a diagnostic/prescriptive instructional methodology compatible with the criterion-referenced testing orientation is presented. Between sessions, the PDP coordinator observes in classrooms to make sure

that teachers' applications of the teaching methodology are appropriate. More advanced PDP programs are offered based on an annual survey where teachers indicate their preferences for coursework. The PDP program, including the release time for teachers, the training of substitutes and aides, and additional conference attendance is part of the regular district budget.

District B: School Improvement Model

The purpose of this instructional information system is to facilitate school site planning decisions about the allocation of resources to meet needs perceived by parents, teachers, and students. The primary users of the system are school site councils, parents, and teachers, who divide themselves into subject matter committees to make plans for subsequent school years and to monitor the implementation of previously-made plans. Principals are secondary users as are teachers not on the school site council.

The uses to which the data are put include the identification of subject areas in which students need additional attention, determination of the allocation of discretionary school resources for identified school-wide needs, analysis of the opinion and attitude data from parents, teachers, and students in conjunction with student outcome data from standardized norm-referenced tests.

This district, on a once-a-year basis, administers a standardized test of basic skills. The printout is received back from the test publishers by school, by subscores. Further analysis is done by the district office and is made available to the school site planning team. In addition, the district has developed a parent and a teacher attitude survey, sent out once a year, collated by the district, organized in graphic format, and

distributed to each school site council. Each school, furthermore, develops and distributes a "Smily Survey" to assess student attitudes toward particular subject areas.

The central office of the district provides to the school site council written reports with data not only from the current year but from previous years. When the system was in its infancy small group training sessions were held; district officials say that they have subsequently become unnecessary as new school site members are socialized into the process by more experienced colleagues. The distribution of the reports follows an annual cycle. The tests are administered in February, the surveys go out in March, the information is collated and fed back to the school site councils in April, decisions are made in May, plans are implemented starting in September, the school site council updates the timelines for the plans as the school year proceeds, school site council monitoring of the implementation of aspects of the plan occurs at meetings throughout the winter. The cycle then repeats itself.

As for contributing components: Training for teachers and parents when the system was first installed included group process skills, communication skills, decision making skills, skills in interpreting test score terminology. Such training is no longer provided by the district routinely although it is available on an as-requested basis. The district releases teachers to engage in school site planning. The resources for implementing the action plans made by the site council come from the California School Improvement Budget and have been regularly available over the past five years.

District C: Staff Development Model

The purpose of this instructional information system is to enable central office staff to train teachers and principals in those subject matter areas in which students demonstrate deficiencies. The primary users of this system are the staff development, curriculum, and supervisory personnel in the central office. Indirect users are principals and teachers. The uses to which the information is put are primarily planning and conducting ongoing and summer staff development activities which either train teachers in how to instruct students in a particular area or encourage teachers to develop new text or supplementary materials. The information fed into this system comes primarily from a state-wide assessment test which compares school-level student achievement across the state. The press and the school district receive from the state the printouts of the scores organized in high-low order of school attainment. Subsequently, district officials receive more precise score breakouts. These data are supplemented by newly developed district-wide utilization school proficiency tests. In this district, there is no explicit monitoring of system functioning and system use.

As to contributing components: Since the primary users are central office personnel, there is limited need for training for them in decision making and implementation. Substantial amounts of district resources, both in terms of time and money, are made available to support action planning and the implementation of staff development activities.

What to Consider When Developing a District Instructional Information System

As we noted previously, instructional information systems are in a sense a selected educational application of management information systems. As such, we should look at what has been learned from those who have used and studied the usefulness of management information systems in other organizational contexts.

Because of space limitations, we will only summarize some of the major shortcomings users of management information systems have identified. Users complain that they:

- do not understand output
- do not get information in timely fashion
- do not get accurate information
- do not get information that provides them with the type of analysis they need

Systems designers and managers complain that

- costs and development time are high
- there is difficulty in keeping the system feasible and adaptive

Organizational analysts observe that MIS systems

- do not take into account the realities of organizational life
- alter the power relationships among departments, groups, individuals
- change the content of various jobs and tasks

From those suggestions and our field work observations, we would urge that instructional information systems developers strive to:

1. Make the system attractive, easy to use, integrated into the daily life of district personnel, principals, and teachers.

2. Make the system responsive to the users' unique and normal styles of inquiry.

3. Make the system helpful to the user in formulating problems as well as resolving them; in generating alternatives as well as selecting them.

Summary

Clearly, school district instructional information systems are in an early developmental stage. But IIS may be an idea whose time has come. Existing testing, evaluation, and research activities that are often not related to one another can be integrated into a single comprehensive system. What is more, the development of increasingly affordable personal computers provides the technology for easily providing instructionally relevant information to wide and diverse audiences. We feel that the potential benefits of this emerging information revolution can be best realized if school districts begin linking together and ultimately integrating their data into a comprehensive school district instructional information system. The districts in which we have conducted our research bear testimony that such systems can be developed and that they can provide a very useful tool in building and maintaining an effective instructional program.

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THE IMPORTANT DISTRICT ROLE IN EDUCATIONAL REFORM

by

Richard C. Williams and Adrianne Bank

Background

The report of the National Commission on Excellence in Education provides the most recent confirmation of a growing national uneasiness about the state of American public education. Describing the present public educational system as drowning in "a rising tide of mediocrity," the report implies that no one has been "attending the shop" and that we (eduators, parents, taxpayers, students) must now implement a series of reforms to ensure that our educational system will once again prosper. The Commission even gives us guidance in selecting the appropriate strategies to follow, including: upgrading text books, lengthening the school day and year, more homework, and higher teacher pay.

To those of us who have been working in education or observing the national education scene since its reaction to Sputnik in 1957, this has a familiar ring. As we recall, Sputnik supposedly shook the American educational establishment out of its "progressive educational" dream world and brought it back to the realities of upgraded textbooks, lengthened school days, more homework, and higher teacher pay. And if we continue to follow educational history through the 1960's and 1970's we find a continued emphasis on basic skills through such programs as Head Start and Follow-Through.

For the past 20 years America has indeed focused its attention on schools and has poured considerable amounts of material resources into its

schooling system* even though the commitment may have lagged a bit in recent years due to runaway inflation and a sluggish economy.

Our basic thesis can be stated thus: the American people have not been ignoring their schools nor have they or those who work in the schools ever abandoned their concern for a quality system. If the schools have not improved substantially in spite of continuous reform attempts, it is because many of the strategies designed to improve the schools have been unrealistic -- they have not adequately accounted for the complexities and dynamics of the schools as they actually function.

As we review educational reform efforts over the last few decades we can divide them into two categories. In one set are what we will call targeted reforms (focusing on one component of schooling); in the other set are what we will call school site reforms (focusing on schools as cultures, with linked sub-components). We argue that the targeted reforms, no matter what their specific content, have had very limited success in accomplishing the intended goal of improving the quality of education. The school-site reforms, we believe, have been more successful. However, their potential impact has been blunted because an essential supporting element -- the school district -- has not been adequately mobilized.

The point of view expressed in this article is that the school district, which we define to include the central office staff and the school board, has been a neglected actor in the school reform movement. We

*David Tyack states that from 1958 to 1975, the "Federal government's role in education grew to include 66 categorical programs while California alone initiated 58 reform initiatives" (Tyack, Krist, & Hansot, 1980, p. 259).

believe that the district structure has the potential for being an empowering agency for constructive system-wide change but in recent years has not been so recognized or encouraged. To support our thesis, we will first look at some targeted reforms that have had limited impact, then explore the relative strengths and weaknesses of school site solutions, and finally, from our research, describe how well-managed districts can encourage and support good schools.

Targeted reforms include legislated and funded changes that attempt to improve schools by focusing on only one component of schooling, for example, teachers, curricula, school management, student outcomes. Examples of such targeted reforms include: changing teacher and administrator credential requirements, mandating more homework, requiring standardized testing, installing accountability schemes. The flaw with these well-intended target solutions, no matter how appealing they are to common sense or how well-supported by research, is that they do not begin to address the multi-faceted systemic characteristics of public schools. Over the years, many of these changes introduced into our vast, complex system have disappeared without a trace or they have been effectively sabotaged. Procedures that appear to be dynamic in conception have become symbolic bureaucratic exercises in operation. Perhaps an example of California's attempt to improve its teachers will help to illustrate our point.

In the early 1970's, with great fanfare, California introduced a teacher accountability scheme embodied in the Stull Act. The quality of classroom teaching was going to improve because each school district would

be required to establish a procedure whereby principals or other teacher supervisors would meet periodically to evaluate each teacher. Unique to the Stull Act was the idea that teachers' evaluations should be based on student learning. No more would teacher evaluations be based on irrelevancies such as the neatness of their bulletin boards or the pleasantness of their personalities; or on the subjectivity of principals' judgments. Teachers whose pupils did not make expected gains were, by definition, teachers in need of assistance. Presumably, if the teacher's pupils remained resistant to learning, he or she could be dismissed for incompetency.

Now, after more than a decade, it is apparent that the Stull Act has not had its anticipated beneficial impact. In district after district the Act has been diverted into a routine set of pro forma paperwork exercises. Teachers talk about being "Stulled," a process to be endured if it cannot be avoided. With hindsight, several flaws in the Act's provisions are self-evident. Its modified Management By Objectives (MBO) approach carried only sanctions -- no rewards. If a teacher's students performed satisfactorily, everything stayed the same. If a teacher's students did not, he or she was ultimately subject to dismissal. The Act implied that student learning outcomes were primarily the result of adequate or inadequate classroom instruction. Teachers knew this to be an unfair assumption about the power of teaching and teachers. They knew that myriad influences outside the classroom, e.g., home life, peers, nutrition, language, transiency, affect each student's learning and the collective learning of the entire classroom. Finally, the legislation was based on an erroneous

belief that there were valid, reliable measures that could accurately assess student learning. These major conceptual flaws were compounded by problems in execution. When the Stull Act became law, it became apparent that few principals or supervisors could provide instructional supervision and assistance to teachers in the different subjects taught. Is it any wonder that principals and teachers immediately began to subvert such an an unworkable reform, even one with honorable intentions?

While complying with the letter of the law, they violated the spirit. Teachers set instructional objectives knowing that their students would very likely achieve them. Principals tacitly went along with the charade. And, to no one's surprise, students for the most part achieved the objectives as they had been written. The prevailing perception among school people, then, is that the Stull Act has had little positive impact in improving California's schools. But everyone knows that it has generated an annual flurry of paperwork absorbant of time and energy which might be better spent elsewhere.

We could provide other examples of targeted reforms. Most of the educational fads of the 60's and '70's were of this type: e.g., the push for better curricular materials, the swing to open learning centers, the expectation that differentiated staffing might work. Our point is that targeted reforms haven't worked in the past and they are unlikely to work in the future because they do not take into account the realities of public schooling as complex, dynamic, decoupled systems.

School site solutions. Educators and legislators, stung by these failures, have begun to formulate more sophisticated approaches to

educational reform based on the view that the school site is a culture whose subcomponents are linked to one another. Reform then becomes an ongoing annual process whereby the principal, teaching staff and community work together towards assessing the school's needs, determining appropriate solutions, and implementing and evaluating the results.

Among the early research into this site-specific problem-solving process was the I/D/E/A study in educational change sponsored by the Kettering Foundation. Between 1967 and 1972, 18 elementary schools formed a self-help "League of Cooperating Schools" (Bentzen, 1974). Each school, bolstered by a core group of League-affiliated university consultants and by support from one another, undertook self-initiated reform. Over a five-year period of time, some of those schools showed remarkable courage -- transforming themselves from dull routine places into dynamic, exciting learning environments alive with new ideas and programs.

Subsequently, several state and national educational programs have utilized a similar school site approach, e.g., ESEA Title I, PL 94-142, and California's School Improvement Program (SIP). California's 1977 SIP program required that schools organize school advisory councils to plan and implement educational programs based on documented assessments of need. SIP provided funding for start-up and for implementation. Recent studies have shown that, even allowing for the wide variations in how schools carried out the planning process and used the needs surveys, school improvement has indeed occurred (Berman, 1982).

School site action planning has been an attractive model for educational reform. It takes into account the unique characteristics of

individual schools and gives major actors such as the principal, teachers, parents and, in secondary schools, students ownership of the process. It is a mechanism whereby schools address their own needs in their own ways. Thus, a school where children have reading problems can marshal its resources and energies to address that need; the school across town concerned about drug use can direct its attention and funds to that problem.

We applaud the various school site reform strategies. They are vastly more realistic than targeted reforms. But we believe that the school site model also has limitations. Our main concern is that it ignores the pressures on the school coming from the larger social and political environment. It assumes that schools need no buffering agency nor any ongoing support structure outside themselves. It assumes that they are in charge of the major aspects of their own governance.

But individual schools have limited control over the size of their enrollments and of their budgets. The former is influenced by population trends, the latter by legislative actions. School managers have only limited power to hire and fire their own personnel: they are constrained by pre-existing legislation, administrative rules, or union contracts. Publicly supported schools are subjected to nation-wide or state-wide legislative, judicial, social, and political forces many of whose mandates are misaligned with the instructional mission of an individual institution.

Therefore, we believe that individual schools are not large enough or strong enough to initiate and sustain improved instructional functioning by themselves, even when they make heroic efforts in this direction. They

need continuing financial and technical and psychological support from some larger entity in order to sustain their own renewal efforts.

I/D/E/A's League of Cooperating Schools is a good example of what happens when an ad hoc support system assembled for the specific purpose of providing such financial, technical, and psychological support disappears. For five years, League consultants and staff played a critical role in encouraging each school to identify problem areas needing attention. The League provided services on request, e.g.: training for principals and teachers, coaching in group dynamics and problem solving, intellectual stimulation and provision of ideas. With these enabling and empowering services, many schools developed and improved remarkably. However, when I/D/E/A funding ended, the League disbanded. And schools slowly began to transmute back into what they had been before the project began. When principals and teachers who had been leaders in the reform effort left, they were replaced by others without their training or commitment to change. There was no external support system which could sustain the innovations and counterbalance the personnel changes. If one were to visit those eighteen schools today, one would find most to be rather ordinary elementary schools, mere shells of their earlier innovative selves.

From our experience with the I/D/E/A project and from research on school change (Herriott & Gross, 1979; Lehming & Kane, 1981; Rosenblum & Lowis, 1981), we derive an important insight. Missing in both the targeted reform and the school site approach is ongoing support coming from a stable, sanctioned, organizational entity of which the individual school is but a part. In the I/D/E/A project the larger structure was,

temporarily, the League itself. In the everyday world of schools that permanent entity should be the school district.

A common reaction by those teachers, parents, and community groups interested in school improvement is that the district office is an obstacle to be overcome, a bureaucratic morass where good ideas get buried or subverted. When budgets must be reduced, central office administrators are often seen as an easy target. We argue, in contrast, that urgent consideration be given to adding onto any school site reform strategy a role for school districts. Academic, popular, and political attention should be turned to a most obvious locale for initiating, coordinating, and sustaining education change -- the school district.

The School District Role in Educational Reform

The recent history of programmatic change in education gives insight into the current school district role in educational reform. At the turn of the twentieth century, a key political goal of educational administrators was to centralize control of urban schools, to standardize public education, and to vest most decision making in appointed expert superintendents. As these progressive administrators redefined the concept of democracy, the school systems they constructed were literally hierarchical and shielded from lay influence (Tyack, et al., 1980). Many of the ideals and achievements of the progressive administrators came under sharp attack during the 1960's and 70's. The reform generation, starting with Sputnik in 1958 and lasting until the mid 1970's, increased the federal government's role in education to include 66 categorical programs. This created a climate of heightened factionalism over which schooling functions are most important.

Despite the reform rhetoric, regulations by the state, strictures of accrediting bodies, the influence of testing agencies, and bureaucratic inertia often inhibited change. One result of the new politics of educational reform, however, was an increase in regulation of local districts and new pressures for lay participation at the local level (Tyack, et al., 1980). Federal and state laws mandated school site councils. Large school districts experimented with decentralization and community control. Teacher unions grew in number and influence and adversarial relationships became common in school systems.

In the 1980's, the educational reform picture is changing again. Issues such as declining enrollment and tax revolts have surfaced. Current strategies used by school districts to improve instructional programs require the ability to coordinate complex subsystems within the educational organization.

It is clear that districts differ substantially from one another not only in terms of size and level of resources, but also in their administrative philosophy in regard to instruction. Some hands-off districts regard classroom teaching as the responsibility of the teacher subject only to whatever supervision the principal wishes or is able to provide. Other districts centralize scope and sequences of major subject areas, limit schools to one or several options for texts, test all students on their achievement on milestone objectives, and have district-wide mechanisms for creating strategies to remediate student deficiencies. Such a highly coordinated approach to instruction is rare, takes a long time to develop, and is likely to be appropriate only in districts where particular

conditions are extant (Williams & Bank, 1982). These include the presence of "idea champions" who work with a stable core of staff in a community environment which is not embroiled in turmoil or rapid change.

We are not suggesting such a centralized system as the way for all districts to perform. Neither are we advocating the hands-off approach. Rather, we are advocating that the district office attend on a systematic and regularized basis to the development of situation-specific coordinated ways to improve student learning. It is our view that attempts by the district to do their own targeted reform -- such as adding teacher training programs, testing programs, buying new books -- will fail, just as similar reforms fail when mandated by state or federal agencies, because they address only a corner of the educational tapestry. Similarly, we believe that districts which only pay lip service to school site reform, without providing back-up encouragement, technical assistance, and training from the central office will also fail.

This implies that there are two crucial criteria for those in the central office who want to move their districts towards instructional excellence: they must consider the connection between all the parts of their complex educational organization; and they must think of their efforts as part of a long-term sustained effort -- to be modified in the light of changing conditions but not abandoned as soon as the public turns its gaze elsewhere.

We have come upon several districts which have such long-term strategies for supporting on-going, incremental improvement in their schools. These districts did not start with a blueprint or prescription

for instructional improvement. Instead, although operationally quite different from one another, each started when one or several individuals -- who cared, and who had clout -- built a district constituency with a commitment to instructional excellence and had the confidence that they could move their system towards that vision.

Each of the four districts to which we are referring began by trying to understand what their current situation was at the moment. In both formal and informal ways -- that is, by looking at test data, program descriptions, instructional activities, teacher and parent surveys, needs assessments, corridor conversations -- those in the central office who had made a commitement to educational excellence first gathered information to identify strengths, resources, and energies as well as trouble areas in need of fixing.

In District A, this situation assessment led to the development over an eight-year period of time of a highly integrated criterion-referenced testing system linked to a district-wide scope and sequence in math, language arts, and reading. A district-funded professional development program provided teachers with methods to remedy student learning deficiencies. A learning specialist in each school helped with classroom management details, the principal in each school led the annual planning and feedback sessions and monitored classroom progress.

District B, with the same commitment to instructional excellence, used a different strategy. They vested decision making over instructional operations in the hands of a parent/teacher school site council. On an annual cycle, this council received information culled from questionnaires

and test scores by the research and development office. The information was formatted so the council had a snapshot of their situation which they could compare with previous snapshots of their school. Problem-solving meetings in each school in April generated an annual plan to start in September which had target dates throughout the year for specific actions. District monitoring of the target dates kept up the pressure on the schools to improve according to their own plan.

District C, a large district spread over many miles of urban and rural communities, used their situation analysis as the catalyst for generating district-wide consensus on both student outcome and teaching method goals for their entire system. Teachers, principals and central office administrators wrote their own job descriptions to reflect these goal positions and became willing to hold themselves and others accountable for performance.

District D, a medium size heterogeneous district with many minority groups, brought principals together to analyze their own schools' scores on a mandated state assessment test. This led to the proposing of individualized school remedies, some of which called for increased instructional time to be spent on a particular subject area, supplementary materials to be purchased, and additional staff training. The district stimulated the process, made available the funds, and organized the staff development. Not a one-shot deal, this process of taking stock goes on every year, supported by the district office (Bank & Williams, 1981; Williams & Bank, 1982).

We know of other districts who have created their own versions of coordinated instructional information/action systems to support their visions of instructional improvement (Bank & Williams, 1981). Such

systems do appear to be within the capabilities of most district offices, especially as computer use is becoming more accessible.

We believe that the time is ripe to provide to those districts who have the will but don't quite see their way clearly, with support, encouragement, and technical assistance from the larger educational environments of which they are a part. For example, as state departments of education put together reform packages in response to the renewed public call to excellence, as universities ponder the partnerships they might develop with school districts (Goodlad et al., 1983), as county offices provide their technical services, we believe there should be cognizance of the district office as a neglected resource. Research has suggested factors which characterize effective schools (Edmonds, 1979; Brookover, et al., 1979; Rutter, et al., 1979; Clark, et al., 1980, Murnane, 1980). We believe that effective schools, if they are not to be accidental and evanescent must be supported and maintained by effective districts. It is essential that we learn more about the characteristics of effective districts and how to bring them into being. We call for heightened political, academic, and public awareness of the district as an important agent in educational excellence so that the process of creating effective districts can move forward.

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THE DISTRICT ROLE IN INTRODUCING MICRO-COMPUTERS: A CONTINGENCY APPROACH

by

Richard C. Williams, Adrianne Bank and Carol Thomas

Introduction

There are, among those in education, computer optimists and computer pessimists. Computer optimists can visualize schools of the future as part of large scale networks allowing students and teachers access to information of a quality and quantity never before possible. They see computers rectifying the resource disadvantages of small schools, meeting the needs of minority populations, encouraging problem solving, creativity, and individualized instruction. Computer pessimists, on the other hand, see reading and writing devalued as more time is spent with computers and less time with books, greater personal isolation as learning occurs primarily through interaction with machines rather than with other people, a widening gap between the rich who have computer access and the poor who do not. (Coburn, et al., 1982)

But whether one is an optimist or a pessimist about the future implications of computers, as a school or district administrator, one must be a computer realist. According to Market Data Retrieval, October, 1982 figures, based on their annual telephone survey of all U.S. districts, over 24,000 public schools now use microcomputers in instruction, up 60 percent from the previous year with the fastest growth rate occurring in elementary schools.

Of the 15,314 districts in the U.S., 9,245, or 60.4 percent, had microcomputers in 1982 as compared with 6,441 a year earlier. The rate of

growth was highest in the smallest districts. By October 1982, 52 percent of these small -- under-1,200 students -- districts had microcomputers while almost three-quarters of the districts with over-10,000 students had them (Market Data Retrieval, October, 1982).

The rate of growth in schools and school districts' acquisition of microcomputers is phenomenal and is expected to continue. But the current statistics on the availability of hardware may be misleading. The National Center for Educational Statistics reports that computers were used by an estimated 4.7 million students during the 1981-82 school year, averaging ing over 9 hours a year of computer access for each student. Differences in amount and type of use were by grade. High schools cite computer science as their major use in instruction; junior highs use terminals for remedial instruction, enrichment and computer literacy. In elementary schools, terminals are used mainly for enrichment, remediation and basic skills instruction (National Center for Educational Statistics, 1982, p. 2).

There is great variation, then, in the availability of personal computers in schools and in the uses to which they are put. There is also variability in the role which district offices play in introducing computers into the educational setting.

Some districts, especially large districts or those with strong central administrations have adopted a highly centralized approach to introducing computers. Here, the district directs the process of selecting, funding, and placing microcomputers in schools, usually with some input from principals or teachers. The advantages of such a centralized approach

include 1) the development of conveniently located and deployable expertise for training and troubleshooting in many schools; 2) the increased capacity to coordinate hardware, software, and training; and the added clout the district has when negotiating with vendors on price, service contracts, and software when they purchase in bulk. Disadvantages of the centralized approach include diminished teacher "ownership" of and enthusiasm for both the hardware and software, less flexibility in accommodating specific classroom needs for particular kinds of hardware or software, lack of knowledge at the central office level.

Other districts have, either inadvertently or intentionally, adopted a grassroots approach to introducing computers. In these cases, computer buffs among the teachers learn as much as they can, find their own or apply to the district for funding, and use their own computers in their own classrooms in their own ways. Their enthusiasm, it is assumed, will spread to other teachers who will then become a critical mass who will eventually come together to form a school-wide plan.

Advantages of this approach include its low cost to the district for educating its own personnel and grappling with individual schools' problems, and the natural spread of the innovation because of enthusiasm and individual initiative. Disadvantages, however, may be serious: much money may be spent on hardware and software while only a few children will learn particular skills, and these skills either may not be picked up in subsequent grade levels or subject areas or may be unnecessarily repeated.

Between the extremes of a highly centralized and a grassroots approach are many intermediate approaches. Each district where the

computer issue has arisen -- and we should note that close to 40 percent of the districts have not yet grappled with the situation -- seems to muddle through, formulating its own responses in reaction to various kinds of pressures.

The Growing Importance of the District Role

Our argument here is that the district central office, along with its school board, must take seriously its role in introducing microcomputers into its schools. Mistakes are becoming increasingly costly. Some districts have rushed out to buy microcomputer systems and found, unhappily, that the system they bought will not continue to meet their needs and that their instructional programs are not well served by the system they have purchased (Thomas & McClain, 1981).

The unfairness to students of leaving issues of computer access to chance is becoming more apparent. A survey conducted by Market Data Retrieval (1982) found that school microcomputer use is associated with wealth of the district -- 80 percent of the nation's 2,000 largest, richest high schools used microcomputers, while only 40 percent of smaller, poorer high schools had them (Lipkin, 1983). Access to micro-computers is also dominanted by male students. A survey of 10 New Jersey high schools offering computer courses revealed a consistent dominance of male enrollment, slightly more than 60 percent. Studies of California schools report a similar trend (Bakon, et al., 1983). In addition to computer access, the issue of equity is also reflected in how schools use computers. When computers are used in suburban schools, it is often in the context of programming and computer awareness. When computers are used in less affluent

inner-city or rural schools, the use is more likely to be for drill and practice and remediation (Field & Kurtz, 1982; Lipkin, 1983). The desirability of having a coherent computer literacy scope and sequence, analogous to that in reading, math and language arts, is daily becoming more evident.

There are, in short, many issues that are too large and too complex for individual schools to resolve each in their own manner. In the current world of educational computer use, effective districts are essential for effective schools. A brief summary of some of the issues with which a district must eventually cope is included in Table 1. We have grouped these issues into categories: hardware acquisition/fiscal issues, software issues, management issues, staff development issues, and instructional issues. The issues in each category have been organized according to major policy questions and operational planning questions.

A Contingency Approach to District Involvement with Computers

As noted above, many districts have responded reactively to the rapidly expanding availability of relatively inexpensive computers and programs that can be used for managerial and instructional purposes. Whether centralized or grassroots in character, their approach might well be labeled a "non-planning strategy."

There are a number of understandable reasons for the prevalence of this approach. School districts, like many individuals and other organizations in the public and private sector, are unsure about how to assess the potential value of an "exploding" technology. And there are other reasons related to the marketing of computers. For example, many computer vendors

Table 1

Issues in Need of District Attention

Issues	Policy/Framework Questions	Operational Planning Questions
Hardware Acquisition/ Fiscal Issues	° What criteria/guidelines should be established for hardware acquisition? ° What percent of the computer budget should be allocated for software purchase and maintenance? ° Should a single computer system be used for both instructional and administrative purposes? ° What percent of the computer budget should be allocated for software purchase and maintenance? ° What resources are available for personnel costs associated with hardware use? ° What inservice training budget allocations should be made? ° What strategies should be used by educators in dealing with computer vendors?	° What successes/failures have been experienced by other districts with specific hardware? ° What is equipment's reliability? ° What maintenance warranties and assistance will vendors provide in installing and servicing the equipment? ° What peripherals are available for specific hardware and provided by the vendor? ° What expansion options exist? ° What training will the vendor provide in the operation and programming of the hardware? ° What size machines and/or memory are required to run the programs needed and achieve computer use objectives? ° What software is available and at what cost in relation to the characteristics of hardware? ° What are the estimated costs for hardware, software, maintenance, facility preparation, and staffing needs for each application? ° What strategies should be used for financing computer acquisition?

Issues	Policy/Framework Questions	Operational Planning Questions
Software Issues	° Under what conditions should districts undertake software development? ° Should the district operate a software library? ° What is district policy relating to copyright issues for purchased and teacher-developed programs? ° How and by whom should software be located evaluated, and acquired?	° How can results of software evaluation be disseminated? ° Do the software cassettes or discs include documentation? ° Is the software program educationally sound? ° How can computer software be integrated with other instructional activities?
Management Issues	° What role will other educational service agencies and groups have in the district framework and plan? ° How will the district judge if their computer implementation program is successful? ° How should resources be allocated to ensure equal educational access and use of computers? ° What security precautions should be taken? ° What phasing-in strategy should be implemented for the district's computer plan?	° What implementation strategy and timelines are needed for elementary and secondary levels of the district? ° Should schools have centralized placement or individual classroom/department placement of computers? ° What strategies can districts use to encourage female students in computer use?
Staff Development Issues	° What do teachers, principals, and other district staff need to know to use computers? ° What teacher certification requirements should be established, if any? ° Who should conduct and evaluate the computer training and what type of follow-up assistance will be provided?	° Will the district develop staff to be local computer resource persons? ° What computer training, both preservice and inservice, should be required for teachers and administrators? ° What strategies should be used to allocate time for staff training and hands-on computer experience?

Issues	Policy/Framework Questions	Operational Planning Questions
Instructional Issues	° What roles will computers have in the school, e.g., computer-assisted instruction, computer literacy, computer programming? ° Should all students meet minimum computer competency requirements? ° How will the instructional role of teachers change with increased computer use?	° What kind of social problems are being introduced into schools along with computers? ° How can the district ensure equity in computer use, especially higher level and creative uses? ° What are reasonable rules and guidelines for student computer use? ° Is there a specific need for a "computer literacy" curricula? ° What are appropriate educational goals and curriculum materials for computer literacy? ° How can the teacher overcome the constraints of using individually-oriented computers in the context of a group-based instructional organization?

provide free or low-cost introductory offers to school districts in hardware or software or staff training in order to get districts to make a long-term commitment to the vendor's brand. School districts operating on meager financial resources find it difficult to refuse the hook hidden in this sudden technological largesse and they purchase before they plan. Another reason for non-planning is avoidance: the level of uncertainty and ambiguity is so high that central office staff don't know where to begin in devising a comprehensive strategy. The hardware and software is constantly changing; is unfamiliar to many who would potentially benefit from its availability; threatens some who think they don't want to or can't learn about it. A further psychological complication is created by students who seem to know far more about and have far greater aptitude and appetite for this new technology than do their teachers.

To some administrators, the logical response to this problem is to begin with a rational planning model, following a series of sequential steps that would include: carefully defining the district's objectives as regards computer use; determining those steps that would have to be taken by various district components, e.g., teachers, district administrators, principals, in order to accomplish each objective; establishing time lines and sequences to be followed; determining ways to evaluate whether specific objectives had been achieved; applying corrective actions in instances where objectives had not been met.

Linear planning can be an effective tool to help organizations achieve specific goals when there is a common knowledge base, where lines of authority are clearly defined, and where there are the resources to

carry out the implementation sequence; we doubt, however, that linear planning is an appropriate tool for questions of computer selection. School districts lack sufficient knowledge about or control over important factors that must be accurately estimated in order for a linear model is to work. For example, school districts are subjected to shifting forces outside of their organizational boundaries over which they have little control, e.g., political support in the community, changing population, externally mandated strategies in key administrative and instructional areas, and uncertain financial resources. Given these conditions, and the rapidly expanding computer technology, we think it a waste of time to try to determine exact goals and the means to accomplish them. By the time such a comprehensive plan is devised, it is likely that conditions will have changed so as to make the plan obsolete.

Under such conditions of uncertainty and change, we reject both "no planning" and "linear planning." We suggest instead the use of an intermediate scheme which we will refer to as a contingency planning approach. This approach suggests that districts' planning be ongoing, incremental, adaptive and self-correcting.

While traditional planning is based on events that have a high probability of occurring, contingency planning takes into consideration other likely conditions, which, if they actually occured, could create serious difficulties for a school district. A contingency approach prepares one to take specific actions when an event or condition not planned for in the formal planning process actually does take place. It therefore eliminates uncertainty and time delays in making responses, and makes responding to the unpredictable a reasonable part of daily life.

A contingency approach identifies issues of concern (e.g., "what if" questions) and estimates the probability of their occurrence (Steiner, 1979). Both the degree of criticality and the degree of probability must be considered. Alternative strategies to deal with the possible occurrence of these events are identified and considered in terms of the anticipated nature of the events and the district's capabilities and constraints in dealing with them. The result may be a decision by district staff to take some advance "damage control" actions as well as to identify potential strategies to be followed at the time of the events.

A contingency approach may describe "trigger points" or those warning signs which would signal the imminence of the events for which contingency plans have been developed (Steiner, 1979). In some cases, the trigger point might be the event itself, but in other cases the point at which some action should be taken is less clear.

For example, using a contingency approach, districts should begin or continue to become knowledgeable about a wide range of computer-related topics from technology to staff needs, attitudes, and purposes. At the same time, the district should become aware of present uses of computers and start to imagine alternative arrangements that could accommodate the district's activities to the technology's demands.

Armed with such data, the district should, at the same time, identify the optimal dates by which it must make critical decisions regarding what computers to buy, when they should be bought, who should use them, and who should have them. In other words, many of the district's future plans and actions will be contingent upon the unknown opportunities that will be

emerging at some unknown point in time. It is a complex task to decide not only how, but when, to act.

Components of a Contingency Approach

Gearing up for computer use in the district can be viewed as occurring simultaneously in three areas: 1) doing a situation audit (external and internal environments); 2) generating support; 3) formulating district-wide policy; and 4) developing an ongoing operational plan to facilitate decision making.

1. Doing a Situation Audit

The term situation audit refers to a systematic analysis of data, past, present, and future (Steiner, 1979). Such an audit provides the base for planning computer purchase and use. The potential range of topics covered in a situation audit is wide -- anything of importance in the internal and external environments. A major objective of the situation audit is to identify and analyze the key trends, forces, and phenomena that have a potential effect on the formulation and implementation of a framework for district computer use. The situation audit also provides a forum for sharing and debating divergent views about relevant issues regarding potential changes. We discuss the situation audit in terms of an internal inventory and an external resources listing.

An internal inventory. In order to develop an effective district framework, administrators need to know what is already occurring in the community, schools, and homes of students enrolled in the district. Through surveys and interviews, baseline information can be collected regarding what equipment is now available, how much it is now used, what resources and skills there are at present in the district.

Detailed information is needed on the district's current inventory of types of hardware, maintenance problems and their costs, support from vendors, the extent to which existing hardware is compatible and expandable. Districts should know what software has been purchased, where it is stored, how much it has been used. In addition, the district will need to know who, at each school, is managing the use of the computers, how they are being used, and for what percentage of time. In California, one district, inundated with a variety of microcomputers, conducted a survey to determine what equipment existed in their schools. They found that during the past few years each secondary school department had been acquiring its own equipment to meet specific needs. This piecemeal acquisition was now creating problems since schools had bought different brands (Stremple, 1983).

Staff in the district also can be surveyed to determine who has skills for operating what equipment and software, who can program in various computer languages, who can be a trainer of trainers, demonstration teacher, or software evaluator. Parents of students enrolled in the district can be surveyed to determine if a computer is in the home, what type, and if it is used by the student.

The district data base should also indicate what information is already being systematically collected by the district about existing instructional programs, demographic profile, student achievement data, financial transactions, etc.

Finally, an inventory can assess teachers' and students' attitudes towards computers to discover those who are likely opinion leaders and those who are not.

An external resources listing. In addition to internal resources, there are many groups and agencies external to the school district that might provide assistance to district staff contemplating computer use. Electronic Learning magazine (1982) conducted a survey that identified 38 statewide educator-user groups in 31 states, all of which have the general aim of promoting the effective use of computers in the classroom. In those states where no statewide groups were identified, most often a special unit within the state department of education was filling the role. These groups varied in the services they offered, providing a range of the following activities: cooperative funding, newsletter publication, conference organization, resource center, inservice training, software library, and software evaluation. A few of these user groups have national memberships. For example, school teachers in the Santa Clara County area of California formed the Computer-Using Educators (CUE) group which has a membership of over 700 people in 19 states (Unseem, 1981). Minnesota Educational Computing Consortium (MECC) provides services to Minnesota schools and schools in adjoining states.

Corporations and industry leaders also provide support to school districts. Hewlett-Packard in California has fostered industry-education ties by having a number of full time employees who devote time to improving the company's contact with public schools. A committee of top executives examines ways the firm and industry can provide more support for public education. They have loaned personnel and given equipment to schools (Unseem, 1981). A partnership exists between the Washington, D.C. schools and Control Data Corporation. Their partnership calls for the firm to

donate $118,000 worth of terminals and software and an equivalent amount worth of training and administration to the school district. The school system will be matching that contribution (Education Daily, 1982).

Organizations also exist that provide services to districts in specific areas of computer use such as software evaluation (e.g., MicroSIFT in Oregon); information exchange (e.g., Association for Educational Data Systems); data bases (e.g., Resources in Computer Education [RICE]); and newsletters and magazines (e.g., The Computing Teacher, School Microware Directory, Software Review).

In its survey of external resources, the district should become knowledgeable about the talents, skills, and attitudes of people living within its attendance area such as merchants and industrial specialists.

2. Generating Support Within District

This is a top priority. The biggest problem technology enthusiasts had a few years ago was convincing educators that there was a need for computers in our schools; today, in many districts, that is no longer such an obstacle (Oliver, 1983). But commitment from groups such as board members, parents, administrators, teachers, industry and community leaders, and other educational resource agencies is necessary to build a policy consensus. A network of interested persons can be a continuing support system for services, equipment, or funding to achieve program goals.

Successful strategies for generating support for a computer policy vary from district to district. Hands-on experience helps. In some districts, having computers available for home experimentation by

teachers and principals has been effective. Establishing demonstration sites so that board members, principals, and teachers can have the opportunity to see computers in operation and have some hands-on experience has worked in other districts (Swalm, 1983). School districts have loaned school computers to parents over weekends and holidays. A large school district in Texas initiated a computer project that offered low-income parents and children 12 hours of instruction, after which parents could check out computers for home use (Sturdivant, 1983). Other school districts have organized computer fairs, computer clubs, and computer competitions to increase public and student interest (Fisher, 1983).

Identifying an enthusiastic "idea champion" in each school can persuade other teachers to consider approaching the computer supporters in the district. One Texas district developed a new job role called "teacher technologist" for each school (Sturdivant, 1983). Resource centers and use groups have also been formed to share information between schools (Useem, 1981; Stremple, 1983; West, 1983).

Idea champions in districts are also critical to the success of any computer use plan. In some districts, administrators have created formal structures to address issues and allocate resources. For example, the Houston Independent School District has a new division called the Department of Educational Technology that is responsible for implementing a district-wide plan for computer use (Oliver, 1983).

3. Formulating a District-wide Policy Framework.

A critical process in the implementation of a district computer program is to formulate a framework that will guide the development of an

operational plan. A framework allows the district to examine all aspects of computer use and then decide the best applications for students in the district. The development of a framework for a contingency planning approach begins with the assumption that each district's planning process is unique and allows for a range of expertise, points of view, and experience to apply to issues.

With administrative support, an inter-school committee can be organized and charged with the responsibility for developing the district's policy framework. If the district wants computers to be used by all teachers, the committee should not be dominated by any one subject area (Swalm, 1983). The committee should include representatives from interested groups while remaining small enough to constitute an effective working group. One large district with a committee of 25 members took two days to agree on only four goals related to computer use, while another district committee, with seven members, wrote the entire plan in one day (Fisher, 1983).

In deciding upon district policies the committee needs to list the big picture issues it will discuss. In doing so, it should decide whether the central office or the schools will make the decisions on those issues and whether the decisions should be made now or put off until sometime in the the future:

- Computer use: Instructional applications? Administrative applications? Both?
- Criteria for hardware acquisition;
- Software location, evaluation, and acquisition;
- Software development;

- Maintenance of software library;
- Evaluation of computer use program;
- Development of teacher certification requirements;
- Development of minimum computer competency requirements for students.

The task of the committee is to develop a policy framework of broad goals and an overall timeline. Districts that have successfully integrated computers into school programs developed policy frameworks that spread implementation over several years. West (1983) found that the best way for their district to incorporate computer literacy into the curriculum was to develop a five-year framework setting goals and objectives in instructional and management applications. Fisher (1983) suggests that a long-term framework is more effective than a one-time plan. According to Fisher, having a framework spanning several years signals a continuing commitment by the district and is visible evidence that teachers can become involved in the planning at several stages of the process. A long-term framework can also aid in reducing the fiscal burden in any one year.

General financial planning should go on concurrently with developing a framework. A common error in financial planning is to think only about the initial direct cost of the computer facility. Larer and Moursund (1980) listed other aspects that should be considered:

- The needs assessment and general planning, writing of specifications, dealing with vendors, evaluation of bids, supervision of installation, all take time and expertise that require financial resources;
- Costs for site preparation for the facility;
- Computers use supplies and supplies maintenance, both of which mean additional costs;

- Computers need to be maintained and repaired -- a standard estimate is that for large computers a maintenance contract costs about .75% of total equipment cost per month and for microcomputers, perhaps 2% per month;
- Large computer systems require operators and a programming staff
- Teachers need to be trained; curricula may need to be revised; courseware may need to be developed
- Software may need to be revised, developed or acquired. Software will also have to be maintained and distributed.

The goals will facilitate the definition of school-level objectives and determine at what grade level and in what subject areas each should occur. For example, in a framework developed by one California school district, under the broad goal of programming, modifying computer programs was an objective for students in grades 6-8 (Fisher, 1983).

4. Developing an On-going Organizational Plan

Using the policy framework, either the committee or other school or subject groups may want to develop more specific operational plans. Activities that the committee members might engage in to contribute to the on-going operational plan could include analyzing curriculum needs, investigating and evaluating software, visiting programs in other school districts, attending conferences and vendor demonstrations, and developing staff development strategies. Such plans can identify specific aspects of each school's use of computers. An on-going operational plan may want to state instructional objectives in terms of types of students, grade level, and subject areas. Instructional objectives might be some or all of the following: to develop computer literacy for all students, to provide the elements of programming using BASIC, to provide equal access to computer time for all students, to use computer-assisted instruction for remediation in basic skills for identified groups of students.

In Albany Unified School District in California, for example, under the broad goal of use/operation of the computer, objectives were given for three subsets of grade levels: K-5 students would learn how to operate the computer, load programs, and respect copyrights; 6-8 students would focus on appropriate computer use, typing, keyboard, and functions; and 9-12 students would spend time on appropriate programs and vocational use, such as word processing, data bases, network, and telecommunications (Fisher, 1983).

In Cajon Valley Unified School District, also in California, all of the 22 schools in the district were asked to submit a statement of assurances specifying how they would use computers, what their goals and student objectives were, how they would evaluate the program, and who would be responsible for their school's computer program (West, 1983).

The ongoing operational plan might also include objectives and strategies for staff training necessary to implement the district computer use framework. A school district in New York State developed the following four inservice goals: to acquire a functional knowledge of computers for educational use, to learn how to integrate computers into the learning environment, to develop the necessary programming skills to facilitate creation of software suitable for classroom use, and to acquire the knowledge necessary to teach principles of computer awareness (Center for Learning Technologies, 1982).

Naiman (1982) proposed the following staff development strategies:

- Have individual teachers, already knowledgeable, train others;
- The school or system can provide inservice courses during or outside of class times or on inservice days;
- Push on the state department of education and regional centers to offer computer training;

- Some professional associations offer computer workshops at their meetings;
- System can provide release time on a regular basis for teachers to take courses;
- Provide sabbaticals for someone in the district to learn and then share expertise with others;
- Colleges offer semester-long courses or weekend workshops;
- Other public or private organizations, user groups, computer stores, manufacturers, and vendors offer occasional or regular workshops.

When instructional objectives are clear, and inservice needs assessed, the committee can investigate and evaluate software, and finally determine what hardware is required (Swalm, 1983).

A contingency approach is better than no-planning or lockstep planning. And we approve of Fisher's (1983) admonition to leave lots of space in whatever plans are developed: "A good plan will provide time for schools and teachers to 'get up speed,' to become informed and trained in computer use so they can make effective decisions; it will also leave room for serendipity and individual differences." (Fisher, 1983, p. 13.)

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THE COST OF INSTRUCTIONAL INFORMATION SYSTEMS:

Results From Two Study Districts

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Research interest in school district pupil assessment and in the ties between this activity and instructional practice had progressed with a predictable logic over the past few years. A nutshell history of evaluation inquiry would suggest that long-standing efforts to understand and improve the art and craft of evaluation have made room recently for investigations of just how the results of evaluations are used by educators in the schools. And a consequence of this new focus has been a curiosity, primarily academic thus far, in the costs and benefits of performing and utilizing evaluation (1). The Evaluation Systems Project at UCLA's Center for the Study of Evaluation reflects this evolution of attention in its current research program, and reported here are the findings of a second major investigation in the area of "evaluation costs" by Center research staff.

This report accompanies the work of Richard C. Williams and Adrianne Bank on school district instructional information systems. Their recently coined title refers to formally-linked testing/pupil information/instructional planning systems evident in some elementary and secondary school districts (2). The research describes several models of systems fitting such a description; two of these, through case studies, were examined in depth during the past year. Our interest centered on two types of analyses: describing such systems and exploring ways of gauging their

impacts (reported by Williams and Bank elsewhere) (3), and identifying and probing issues related to the costs of such systems. This second effort is reported here.

It may surprise few readers that what we learned in the process of pursuing this cost investigation may be of more lasting importance than the cost findings themselves. So we report on both sorts of results. First the two district systems are briefly described, and a rationale for their selection for this study offered. Then the cost data and analyses are presented, along with a comparison of these findings to some related results from our previous testing costs research (4). Finally, we describe certain lessons emerging from our efforts -- lessons concerning what researchers may expect when approaching field inquiries into educational program costs, and lessons regarding the nature of the policy issues imbedded in the costs of evaluation systems.

Study Models: I. Student Achievement and II. School Improvement

Model I

The student achievement model describes a system developed over the past dozen years in a small California school district as part of its curricular emphasis on individualized instruction. In this district, teachers use the results of twice-annual, criterion-referenced achievement testing in order to place students in classes, to group youngsters within classes for instructional purposes, to assess the effectiveness of their curricular strategies, to prescribe remedial activities when needed, and to

provide a basis of communication with parents. While all of these purposes are commonly attached to school district assessment practices of one type of another, the study district illustrating this model incorporates these objectives into a tightly linked "system." Not only are these purposes served by a single battery of tests, appropriately geared to grade levels, but also the district's core instructional continua in reading, mathematics, and language skills have been developed in tandem with the tests by the district's teachers and staff. The instructional program and the assessment instruments are thus intentionally matched, and the information generated by the assessments is viewed commonly by district personnel as both relevant and salutary for instructional planning and improvement.

Pupils are tested in the fall and winter of each school year. Results of tests, scored and elaborately organized through district data processing services, are available to teachers within a week (5). Learning specialists at each of the district's schools assist in test administration and interpretation of results. Principals use the test results as the primary basis of fall and spring planning sessions with individual teachers -- a critical component of the district's instructional leadership activity.

The student achievement model is now an ongoing, stable, and dominant fact of the district's instructional life. Both daily instructional activities and incidental assessments of pupil progress are directly geared to the scope and sequence of topics outlined in the continua. Teachers and administrators universally reported the centrality of this "system" to us in our investigation.

Model II

The school improvement model was named for the California educational reform initiative which spawned its creation (5). Legislation over the past ten years has created statewide a pattern of school site planning and programming, which includes the provision of discretionary money to schools for the purposes of carrying out activities identified at each school as critical to its improvement. This planning is performed by school site councils, staffed mainly by teachers and parents at each participating school; planning for instructional emphasis is thus decentralized. Instructional decisions are based partly on test data and partly on the results of systematic surveys of various school constituents. A norm-referenced test (The Iowa Test of Basic skills) is administered annually each spring to all pupils in grades 2 through 6. In addition, parents, teachers, and some pupils are surveyed to probe their perceptions of strength and weakness in current instructional programs.

The results of the tests and surveys are used by the site councils as as a basis for allocating discretionary resources made available to each school due to its participation in the state program -- funds in excess of $100 per year per pupil. These resources are commonly used for specialized instructional materials, or for hiring aides to assist in critical areas of the instructional program. The overall thrust of planning efforts under this model is to assess pupil progress in key areas of the curriculum, and to guide future instructional efforts toward areas of greatest perceived need. Our study district illustrating this model employs it is 40 of its 44 elementary schools district-wide.

The two study districts were chosen according to straightforward criteria. In previous inquiries by our staff into district evaluation practices, these two districts had exhibited strong evidence of having a coherent "system" of pupil assessment and instructional administration. Since the heart of our proposed work was an exploration of attributes and costs of such systems, we were willing to consider any that appeared to be using a tightly linked system. And we were encouraged by central staffers in both of these districts through their willingness to provide information and access to us, and further by their willingness to broach questions of cost in the analysis. As we discuss below, this latter concession may be more difficult to obtain in district settings than might be first supposed.

Approaching System Costs

The costs of a particular program or distinct set of activities in an organization can be thought of in a number of ways. Three approaches dominate the literature surrounding cost analysis: budgetary costs, resource or ingredient costs, and opportunity costs (7). By budgetary costs we mean explicit expenditures directed toward an activity and identified in an organization's budget statements. As might be expected, only when considering very distinct enterprises is this approach to cost analysis very meaningful. For example, if a school district budgets-for and operates a drop-in center for its out-of-school youngsters -- replete with its own staff, facility, and so forth -- its written budget might reflect a close approximation of the monetary cost of such a program to the district. In this case, analysts might look to the district's budget documents for program cost estimates.

For our purposes, and for those of most program cost analyses generally, the budget is very unrevealing. Most school district programs and activities are supported by the efforts of teachers, administrators, staff, parents, and pupils who allocate their time toward a multitude of ends, often simultaneously. And just how much effort lies behind any one pursuit is not often formally accounted-for. Our task of evaluating the costs of pupil information systems is a case in point. Both of the systems under our scrutiny are supported in part by all of the participants noted above, each devoting varying amounts of time. An understanding of the costs of maintaining these two models must necessarily entail knowing something about the extent and value of the time of the people involved, as well as the value of other material resources devoted to the systems. A resource or "ingredients" approach involves just this focus, as does the analysis presented below.

But before proceeding, a final question remains which has led to a third dominant construct in the analysis of costs: how should the costs of resources associated with an activity or program be valued? One suggestion is that market value approximations be drawn for each. Thus, for example, the value of a day of teacher time could be estimated to equal the teacher's annual compensation divided by total days worked per year, administrator time could be similarly valued, costs of facilities used could be annualized and prorated to their various users, and so on. From a decision-making standpoint, however, a more important "cost" that a school district bears in devoting its resources to a particular activity is that it cannot devote such tied-up resources to something else. That resources

have varying values to their owners in alternative uses has led to the idea of "opportunity costs," defined to represent the value of resources to a decision maker in their best alternative deployment.

This analysis approaches the costs of maintaining Models I and II from an ingredients perspective -- our central interest is to identify the full range of resources attached to each system in the study districts, and to generate estimates of the monetary value of these resources. We could thus compare "system" resources to total pupil expenditures in our desire to gauge their overall importance. The analysis presented acknowledges the importance of the "opportunity cost" perspective, but for reasons cited concentrates on identifying resources and estimating their market values.

We relied heavily on the chief coordinator of each of the two instructional information systems studied in order to generate resource estimates. Both were intimately familiar with their systems. Where they did not know how much time or who was involved in performing certain activities, or how much was expended for purchased materials or services, other district personnel were consulted or appropriate district records checked. This approach seems to have led us to a relatively complete picture of each model -- one that withstood crosschecks with various district personnel. The possibilities of bias in responses offered to us are discussed below.

We organized our search for system resources, and report the results here, at three levels of district operation as well as for the district overall. For both Models I and II, we identified activities at the central office, school, and classroom levels. Totals of resources were recorded in their primary units (such as hours per week or fraction of full time, or

actual dollars spent). For purposes of analysis, we calculate monetary equivalents for these resource allocations using estimates of district salary scales. In addition, per-pupil calculations are provided to facilitate comparisons.

Costs of Model I, Student Achievement

The resources needed to maintain the CRT testing and instructional management system of Model I are displayed in Tables 1 through 4. Table 1 presents the costs at the central district office level. These consist primarily of partial time allocations of central staff, and to a lesser extent the costs of test scoring services and material purchases for such things as answer sheets. The coordinator spends on average a little less than one day per week in support of the system over a typical year. In addition, an assistant superintendent reported spending about a day per month on system activities, as did the district instructional materials coordinator. A little more than one third of a secretary's time at the central level is required, primarily to assist with the processing of test results and with the generation of reports used by teachers and principals.

These time allocations have been valued in the table according to approximate salary levels and fractions of time devoted to the system. These factors are shown in the table. The overall level of central resources shown, about $22,000, amounts to a little more than $4.00 per pupil in the district.

S01

Table 1

Model I: Central District Costs

	Type of cost	Cost Estimate
A.	Personnel	
	° Evaluation Coordinator (17.5% FTE @ $34,000	$ 5,960
	° Instructional Materials Coordinator (5% FTE @ $30,000)	$ 1,500
	° Assistant Superintendent (5% FTE @ $40,000)	$ 2,000
	° Clerical Support (37.5% FTE @ $18,000)	$ 6,750
	Total Personnel Costs	$16,210
B.	Equipment and Materials	
	° Computer (17.5% devoted to CRT, annualized cost of ($10,000)	$ 1,750
	° Paper and Materials	
	- Answer sheets	$ 750
	- Photo copying	$ 750
	- Printing	$ 2,500
	Total Equipment and Materials Costs	$ 5,750
C.	Total Central District Costs	$21,960
D.	Per Pupil Cost	$ 4.22

Costs at the school site level, based on the same approach, are greater than those at the central office level. This is primarily because of the significant amount of time spent by teachers and principals in planning instruction on the basis of system reports. Each principal spends a full week twice per year in one-to-one consultations with teachers to assist in instructional management. For each principal, this contributes

to a total of more than a ten percent allocation of time on a yearly basis to the system. For each teacher, this planning activity occupies about six hours per year. In addition, a learning specialist at each school site devotes one day every other week to system activities. These school site-level costs, shown in Table 2, amount to a total of about $15.00 per pupil over the year.

Table 2

Model I: Site Level Costs (non-testing)

Type of cost	Cost Estimate
A. Principal (2 weeks plus 1/4 to 1/2 day per week ongoing = 12% FTE @ $30,000)	$ 3,571.00
B. Learning Specialist (10% FTE @ $28,000)	$ 2,800.00
C. Media Specalist (2% FTE @ $25,000)	$ 500.00
D. Teachers (6 hrs. @ $17 for each of 22)	$ 2,244.00
E. Total Cost	$ 9,115.00
F. Per Pupil Cost	$ 15.19

The remaining costs, those for testing, of conducting the Model I system are displayed in Table 3. In addition to spending 5 to 10 hours per semester in administration of the tests, teachers spend about 5 hours in preparation and grouping youngsters for testing, and some teachers receive brief inservice sessions related to the testing program. In addition, some items on the tests are teacher- or aide-scored, and the values of these time allocations are shown in the table. The time pupils spend taking tests and the time of parent volunteers have been recorded in the table,

but no dollar approximations have been made. Testing costs identified amount overall to a little more than $17.00 per pupil.

Table 3

Model I: Testing Costs (per 30 pupils)

	Type of cost	Cost Estimate
A.	Pre-Test Activities	
	° Teacher planning: 5 hrs. (@ $17 per hr.)	$ 85.00
	° Teacher inservice: 1/2 hr. (not all teachers each year)	$ 8.50
B.	Test Administration	
	° Teacher: 15 hrs. per year average (5 to 10 hrs. per semester)	$ 255.00
	° Pupils: 15 hrs. per year	$ n.b.
C.	Scoring and Analysis	
	° Teacher-scored items: 8 hrs. per year average	$ 136.00
	° Aide: 4 hrs. @ $10 per hr.	$ 40.00
	° Parent Volunteers: 4 days	$ n.b.
	Total Testing Costs (30 pupils)	$ 524.50
	Testing Costs Per Pupil	$ 17.48
D.	Total District Testing Costs (3800 pupils)	$60,600.00

*n.b. = Non-Budget Item

The costs of Model I are summarized in Table 4. Central office, school site, and pupil testing costs total about $34.00 per pupil in the district. To this figure we might add a factor representing the value of pupil time involved for testing (about 15 hours per year) to achieve an overall picture of resources supporting the Model I system.

501

Table 4

Model I: Total System Costs

	Type of cost		Cost Estimate
A.	Central Costs		
	° Personnel		$ 16,210.00
	° Equipment and Materials		$ 5,750.00
		total	$ 21,960.00
B.	School Site Level (non-testing)		
	° Coordination and development		$ 63,805.00
C.	School Site Testing (524.50 per 30 pupils)		$ 60,600.00
		Total	$146,365.00
D.	Total Costs Per Pupil		$ 34.00

The Costs of Model II: School Improvement

As described earlier, there are substantial differences between the Student Achievement Model and the School Improvement Model as systems for guiding instruction. Whereas the chief activities of the first are to test pupils, analyze test-generated information, and modify teaching activities, the primary methods of the second are to conduct a comprehensive planning process and to direct specific added resources to identified areas of instructional priority on the basis of planning outcomes. As we might expect, observed patterns of resource use and costs for the two systems differ as well. The costs of Model II are presented in a manner parallel to the discussion above. Tables 5 through 8 present district, school site, and classroom level costs as well as a summary of costs respectively.

The central district costs for Model II were more plainly evident both to researchers and district staff than were those for Model I. Two professional staff members -- an evaluation specialist and a resource teacher --

devote themselves entirely to the Model II planning and evaluation system. Other central office personnel involved include a secretary at about half-time, and a small amount of temporary clerical assistance. Costs for these personnel (with total benefits to these staff shown separately) are displayed in Table 5. The table also shows costs for contracted research services (for assistance with the constituent surveys), and for word processing and printing. The total central costs, a little less than $100,000, amount to between $6.00 and $7.00 per pupil.

Table 5

Model II: Central Costs

Type of cost		Cost Estimate
A. Personnel		
° Evaluation Specialist		$27,600
° Resource Teacher		$18,800
° Secretary		$ 8,000
° Temporary Clerical		$ 1,500
° Benefits		$15,500
	Total	$68,300
B. Contracted Research Services		$16,000
C. Word Processing Services		
° Equipment Rental		$ 2,500
° Maintenance Contract		$ 1,000
° Supplies		$ 1,500
	Total	$ 5,000
D. Printing		$ 7,000
E. Miscellaneous		$ 1,000
F. Total Central Office Costs		$97,300
G. Costs Per District Pupil*		$ 6.41

*15,178 pupils in grades 2-6

The costs of Model II incurred at school sites, not including those for testing which are discussed separately below, are concentrated primarily in the time of various individuals devoted to planning and management. The school site councils engage teachers and parent volunteers in planning for constituent surveys and in making instruction-related recommendations based on the results of surveys and pupil tests. Administrators assist site councils in ongoing monitoring of instructional activities at each school. The amounts of time spent on the system for each of these types of people are recorded in Table 6. For teachers and administrators, dollar approximations of these costs are presented. Again, volunteer time is noted but not translated to dollar equivalents. The total site level costs amount to almost $9.00 per pupil.

Table 6

Model II: Site-level Costs, Non-Testing

Type of cost		Cost Estimate
A. Planning		
° Administrator (1 day @ $150)		$ 150.00
° Certificated Staff (1 day @ $100 for each 16)		$1,600.00
° Community Volunteers (1 day for each of 12)		$ n.b.*
	Total Planning Costs	$1,750.00
B. Ongoing Program Management		
° Administrator (1 day per month over 9 months)		$1,350.00
° Certificated Staff (1 hr. per month over 8 months for each of 16 @ $17 per hr.)		$2,176.00
° Community Volunteers		n.b.*
	Total Program Management Costs	$3,526.00
C. Total Site Level Costs Per Site		$5,276.00
D. Costs Per Pupil		$ 8.80

*n.b. denotes non-budget costs

Testing costs for Model II are shown in Table 7. The annual administration of the test (The Iowa Test of Basic Skills) requires three hours of teacher and pupil time, as well as two hours of a reading coordinator's time per classroom. Tests are administered to all pupils in grades 2 through 6. The costs of this testing amount to a little less than $3.00 per pupil per year.

Table 7

Model II: Site-level Testing Costs Per 30 Pupils

	Type of cost	Cost Estimate
A.	Teachers (3 hrs. @ $17)	$ 51.00
B.	Reading Coordinator (2 hrs. @ $17)	$ 34.00
C.	Pupils (3 hrs. each)	$ n.b.*
	Total Cost	$ 85.00
D.	Total Site Level Testing Costs (grades 2-6)	$42,955.00
E.	Per Pupil Cost	$ 2.83

*n.b. = Non-Budget Item

Comparison of Models I and II

Table 8 presents summaries of the various monetary costs discussed in the previous section. The comparative figures illustrate fundamental differences between the two models. The most obvious difference is in the amount of testing time devoted to support each system. Model I's CRT assessment occupies youngsters for about 15 hours per year and their teachers for even longer. In contrast, the ITBS administered for Model II is completed in 3 hours. This results in testing costs of more than $17

per pupil in the one format and less than $3 per pupil on the other. The second major difference in the two approaches, at least in their generation of costs, is the relative abundance of teacher and principal time required by Model I for instructional management activities. This is shown in Table 8 where site-level non-testing costs are more than $12 per pupil for Model I and less than $9 per pupil for Model II. The central-office costs of maintaining the two models are about $4 and $6 per pupil, the more expensive being Model II where full time staff are allocated to the pupil information system. The overall scorecard indicates that in estimated dollars per pupil, Model I is considerably more expensive to administer -- $34 versus $18 per pupil.

One additional perspective is generated in Table 8. When district operational expenditures per pupil are considered, each model requires less than 1 percent of district spending for its maintenance -- the more expensive Model I taking up about 1 percent and Model II requiring about 2/3 of 1 percent of district per-pupil expenditures. This overall level of system resources devoted to instructional information systems is consistent with the findings of our previous research into the costs of all pupil achievement testing conducted in school districts. Here we found that testing for all purposes, of which the type of testing discussed here is a subset, accounted for approximately 3 percent of district expenditures (8).

Table 8

Model I and Model II: Cost Comparisons

Location of Cost	Model I		Model II	
	Total	Per Pupil	Total	Per Pupil[1]
Central Office	$ 21,960	$ 4.22	$ 97,300	$ 6.41
Site Level, non-test	$ 63,805	$ 12.27	$133,570	$ 8.80
Testing at Site	$ 60,600	$ 17.48	$ 42,955	$ 2.83
Total Costs	$146,365[5]	$ 34.00	$273,825[4]	$ 18.04
Percent of P.P.E.		0.97%[2]		0.67%[3]

1) 15,178 pupils, grades 2-6
2) Estimated $3,523 p.p.e.*
3) Estimated $2,700 p.p.e.
4) Plus community volunteer time and pupil time
5) Plus parent volunteer time and pupil time

*p.p.e. denotes estimated per pupil expenditures for district operations

Implications for Decisionmaking?

The view afforded by this analysis of the costs of instructional information systems suggests that these enterprises are not particularly costly, and that they are not potential sources of reallocatable resources for districts looking for cost-saving changes. Ten to thirty dollar per pupil stakes in the face of $3,000 annual per pupil expenditures are not cause for immediate alarm. This conclusion is reinforced by the limited degree to which even these small costs could be considered discretionary. If the costs of the two models are explored for direct expenditures which could be curtailed by decisions to not spend money (such as for supplies or

purchased services) few candidates emerge. Table 9 shows that of Model I costs, only about 2 percent fall into this category, and for Model II, discretionary costs amount to less than 11 percent.

Table 9

Model I and Model II: Direct (discretionary) vs. Indirect Costs

Model I		Model II
Total System Costs	$176,661	$273,825
Discretionary Costs (Paper, photocopying, printing)	$ 4,000	$ 29,000 (Word processing, miscellaneous, contract research,
Percent discretionary costs	2.3%	10.6%

The notion of opportunity costs further informs our discussion at this point. While the various displays in this report generally show small dollar approximations of the many resources contributing to the pupil information systems studied, they also portray these resources in ways that facilitate this alternative conception of costs. To illustrate, if the evaluation director spends all of his time on one of our "systems," he is unavailable for other pursuits. If a school principal spends 2 weeks on one required task (such as in conferences with teachers in Model I), he cannot spend this time on something else. In short, any time devoted to an instructional information system in a school district, or to anything for that matter, has an "opportunity cost." That cost is the value of what that time might gain for the district if spent differently.

The most valid approximation of the magnitude of the "opportunity costs" implied by any chosen activity is the value of the best alternative use to which the resources taken-up might be applied. The opportunity costs of the systems studied here are represented in this analysis only indirectly. The amounts of resources devoted to the systems, most significantly the time commitments of teachers and administrators, are listed, but no attempt is made to assess the value of the opportunity costs involved. Estimating just what these professionals might accomplish with their time, toward similar or unrelated ends, must submit to further analysis or at least to the cogitations of those contemplating resource use decisions in light of this information. We do not perform these exercises as a part of this report. But such analysis could contribute to answering some important questions, such as: What sorts of instructional information systems are most cost effective? -- under what circumstances? Are they worth supporting at all?

Other Lessons

We promised earlier that we learned more than just cost estimates by pursuing this research. We attempt to catalogue these observations here:

1) Cost inquiries require creative detective work on the part of researchers. Program costs are not customarily recorded in accessible form in school district documents. This is due primarily to the multiple contributions of the primary district actors -- teachers, administrators, and pupils -- to an ample range of programs and goals of the district's schools. This is also due to a historical lack of district sponsored cost analyses similar to these attempted here.

2) Accounting for the ingredient or resource costs of a particular school program requires that researchers develop a complete picture of the functioning of the program under scrutiny. The basic questions of this accounting -- who and what are involved and to what extent -- demand such understanding. As such, remaining members of our team of researchers, who wished to focus on system characteristics or estimates of system impacts, also benefitted from the activities of the cost analysts. In a converse sense, researchers providing descriptive analyses of programs may have less additional work than they might first suppose if they wish to extend their analyses to areas of cost.

3) Since program cost analyses of the sort described here are rarely undertaken within school districts, the subjects of proposed research such as this may evidence either disinterest or reluctance when solicited for participation. Disinterest may be caused by the impression that the the information would have little practical utility and therefore not warrant any costs of cooperation. Additional skepticism may be caused by the simple fact that cost analysis is presumed to be driven by a quest for economies. A potential result of a cost analysis is the suggested reallocation of resources, and if a program is portrayed by researchers or interpreted by decision makers to be expensive, it may suffer pressure for budget reductions. Since the type of knowledge generated by cost analysis is not generally available for a full range of most school district programs, the subjects of proposed research may feel singled-out and threatened by a proposal. This has been overcome in our research so far through our guarantees of confidentiality, through a shared exploratory curiosity

among researchers and subjects, and probably through the convictions of our respondents that the systems under study in fact do not command extraordinary resources.

4) Some bias may be anticipated in the responses of school personnel to questions regarding the resource demands of their programs. We relied in our research on the expertise of the sponsors and administrators of the instructional information systems studied. Their self-interests may be presumed to lie in casting their programs in a positive (i.e., least expensive) light. (See #3 above.) We did not uncover instances of underestimation in this research. Much of what was told to us by sponsors was verified by the views of teachers and other district personnel, but we did not systematically verify all information that contributed to our estimates. For this reason, the estimates reported should be considered reliable and "lower-boundary" in nature.

5) A key to understanding the meaning of these cost findings is the development of further knowledge of alternative ways of providing the sort of instructional information systems studied here. We have looked at only two models in detail, and the elaboration of a full range of actual or potential configurations of such systems would assist researchers interested in questions of efficiency -- a natural extension of our work thus far.

Notes

1. See Alkin, Marvin and Solman, Lewis (Eds.), The costs of evaluation. Beverly Hills, CA: Sage Publications, 1983.

2. Bank, A., & Williams, R.C. Evaluation design project: School district organizational study. Report to NIE. Los Angeles: Center for the Study of Evaluation, University of California, 1981.

   Bank, A., & Williams, R.C. Improving instruction through the management of testing and evaluation activities: A guidebook for school districts. Report to NIE. Los Angeles: Center for the Study of Evaluation, University of California, 1982.

3. Bank, A., & Williams, R.C. School district use of testing and evaluation for instructional decision making: A beginning. 1983. Manuscript in review.

   Bank, A., & Williams, R.C. School districts in the information society: The emergence of instructional information systems. 1983. Manuscript in review.

   Williams, R.C., & Bank, A. The important district role in educational reform. 1983. Manuscript submitted for publication.

   Williams, R.C., Bank, A., & Thomas, C. The district role in introducing micro-computers: A comtingency approach. 1983. Manuscript submitted for publication.

4. Reported to the National Institute of Education in November, 1982 by the Test Use Project, Center for the Study of Evaluation, University of California. Grant # NIE-G-80-0112.

5. Test reports are generated for each student, for groups of students, for individual classes, for individual teachers, and for schools.

6. This legislation is referred to as the "Early Childhood Education Program" (ECE) and the "School Improvement Program" (SIP), both sponsored by former State Superintendent of Public Instruction, Wilson Riles, during the 1970's.

7. See Levin, Henry M. Cost analysis. In N. Smith (Ed.), New technologies for evaluation. Beverly Hills, CA: 1981.

8. Center for the Study of Evaluation, NIE-G-80-0012, op. cit.

LINKING TESTING WITH INSTRUCTIONAL DECISION MAKING: SOME MODELS AND GUIDELINES FROM RESEARCH

by

Don Dorr-Bremme

Introduction

The nation's investment in school achievement testing is enormous; the amount and variety of testing have continued to grow. Unfortunately, however, much of this testing remains under-utilized. Achievement-test results can be extremely useful in school-wide and district-wide planning and decision making. They can provide information for analyzing curriculum, diagnosing instructional strengths and weaknesses, and determining directions for school improvement. Test-score patterns can also serve as the basis for projecting student achievement goals and monitoring progress toward their attainment. But, as four years of research at UCLA's Center for the Study of Evaluation shows, it is only the rare district in which schools regularly and systematically use testing for these or similar purposes. In most school districts across the country, testing and instructional decision making are not routinely and coherently linked. As a result, few schools and districts are getting a maximum return on the dollars, staff time, and student learning time that they invest in testing. At the same time, the quality of the educational planning in their schools suffers from a lack of of precise and useful information.

What distinguishes the relatively small number of schools in which principals and teachers regularly pay close attention to test scores? How do some districts structure on-going links between testing and instruction in their schools? How can others do so, achieving both fuller use of test-

ing and more informed instructional decision making in the process? This article addresses each of these questions, drawing answers from the Center for the Study of Evaluation's recent, extensive research.

After a brief review of the research base, the discussion below opens with a look at current test-use patterns in the nation's schools. These patterns verify that much achievement testing is indeed under-utilized, and they suggest that there is little use of test information in systematic, school-wide planning. The data also indicate that leadership by district administrators is a key factor in how closely testing is linked to instructional decision making and reveal two general approaches that district leaders can follow in building such links. Attention then turns to some specific ways that each of these general approaches can be pursued by district leaders. Models and concrete guidelines are presented, all based upon intensive case studies of districts that have systems in place for linking assessment with instructional planning and decision making. A summary highlights the main features of these systems.

The Research

From 1979 through the present, the Center for the Study of Evaluation (CSE) at UCLA has been conducting two, complementary studies of testing and test use. One, the Test Use in Schools Project, has studied current nation-wide patterns. Inquiry has focused on many types of tests and other assessment techniques, especially in the basic skills areas of reading/English and mathematics. The project's central effort was a 1981 survey of assessment practices, test uses, and contextual factors that influence them. Questionnaires were sent to the principal and four classroom

teachers in elementary schools and high schools randomly chosen from within a nationally representative sample of school districts. Returns were received from 1,058 respondents: 220 principals, 475 upper-elementary-grade teachers, and 363 high school teachers of English and mathematics. Fieldwork took place before and after this survey; a total of eleven schools (four secondary, seven elementary from five districts in different geographic regions of the country were visited. The two phases of field study produced over 100 in-depth interviews with school- and district-level educators, including 12 principals, 69 classroom teachers, various instructional specialists, and other administrative personnel.

While the Test Use in Schools Project has focused on what is, the second CSE effort, the Evaluation Design Project, has yielded a detailed look at what can be. It has conducted fieldwork in districts which currently have testing-instruction linkage systems in place. In order to locate these districts, recommendations were widely sought and between 40 and 50 of the districts nominated were screened in phone interviews with appropriate district-level administators. Ultimately, eight districts were selected for intensive exploration in on-site interviews and observations. A first phase of the Evaluation Design district organization study (1979-1982) was directed at understanding how the testing-instruction linkages in these districts worked and at identifying the district characteristics that contributed to their creation and maintenance. More recent work has examined the costs and impacts of two of these eight systems, each of which represents one general approach to tying test results with instructional decision making.

While the Test Use Project establishes the need for linking testing with instruction and indicates some general approaches for doing so, study of these eight districts by the Evaluation Systems Project provides some clear guidelines for effective testing-instruction linkage systems.

The Status Quo: Two Tiers of Testing and Limited Use

The Test Use in Schools Project provides a portrait of the contemporary status quo. It describes central tendencies in public-school test use across the nation. This portrait reveals that there are two tiers or layers of student-achievement assessments in our schools today. These are consistently distinguishable from one another in their priorietorship, characteristics, and functions. One tier of assessment is internal or local to the schools. It is "owned," and for the most part produced, by teachers themselves. This local or internal tier includes two main types of assessment: (1) the tests, quizzes, and other measures that teachers construct and administer in the course of their teaching, and (2) the clinical judgments of students' achievement that teachers form as they interact with students and observe their work in various classroom situations day after day. A third kind of measure also figures in this tier, but it is especially imporant for elementary-school teachers. These are the tests included with commercial curriculum materials used in the classroom. While these are not produced in the school, teachers in the elementary grades are most often invested in them. Teachers often have a say in choosing (and choosing how much to use) them and the materials they accompany; teachers can time their administration and adapt their content to fit the pace and emphases of instruction.

The second tier of assessment is external to the school: mandated by the district, state, and/or suggested by federal program requirements (e.g., for placement in compensatory education programs). Norm-referenced, standardized test batteries are the most common among these. Other types of measures used for minimum competency (or functional literacy) testing or as part of state assessment programs are also included here. In some cases, too, tests constructed or purchased by districts and referenced to their curricular objectives fall in this second category. Tests of these kinds are also included there. In some cases, too, tests constructed or purchased by districts and referenced to their curricular objectives fall in this second category. Tests of these kinds are developed beyond the schools. Their administration is called for primarily to meet organizational needs and concerns at higher levels of public-education governance. Those who work at those levels may have a sense of ownership in these tests; educators in the schools rarely do.

These two tiers of assessment function quite differently in most schools and districts. Teachers and principals rely heavily on the results of internal assessment strategies and consider them important as they go about routine instructional planning and decision making. At the same time, they generally treat information from external testing as of minor importance, using it only occasionally and idiosyncratically. These patterns are obvious in both CSE's fieldwork findings and survey data.

Forty-three classroom teachers were interviewed during pre-survey fieldwork in a systematic-but-open-ended format. They discussed all the information they had throughout the year on students' academic capabili-

ties, performance, and progress; they described whether and how they used that information. Collectively, they cited far more uses for the information that came from assessment strategies that were local to the school and classroom. (See Table 1.)

Teachers surveyed across the nation were asked to rate the importance of diverse types of assessment results in four routine, decision-making tasks. Again, the pre-eminence of the internal tier of assessment was apparent. (See Table 2.) Principals in CSE's national survey were asked to rate how important a role data from various sources played in eight regular school-level administrative activities. Here, the separate functions of the two tiers of achievement assessment was especially apparent. Principals reported counting internal assessment data more heavily in making instructionally relevant decisions, e.g., allocating funds, assigning students, evaluating teachers. But they indicated that results of external measures were more important in reporting to those beyond the school, e.g., to district administrators and the public.

Taken together, the research findings just cited show that there are notable quantitative differences in the ways the external and internal tiers of assessment are used by educators in the schools. They reveal that the results of externally mandated testing serve fewer purposes (Table 1) and are not counted as heavily in planning or decision making (Tables 2 and 3). But fieldwork clearly suggests that there are also significant qualitative differences in how the two tiers of assessment are typically utilized by teachers and principals. The results of external tests are most often examined briefly, casually, and asystematically. Do principals

Table 1

Types of Tests and the Uses of Their Results by Teachers (Interview Data)

(Cells show the number of times the 44 interviewed teachers freely cited each use for each type of test)

USES	TEST TYPES									
	A	B	C	D	E	F	G	H	I	Total
Planning Instruction	24	21	10	3	2	3	13	4	2	82
Referral/Placement	3	6	0	2	0	0	11	1	0	23
Within Classroom Grouping & Individual Placement	6	14	18	4	6	5	4	3	1	61
Holding Students Accountable for Work, Discipline	8	2	3	0	0	0	0	0	0	13
Assigning Grades	32	8	17	5	1	1	1	1	0	66
Monitoring Students' Progress	18	12	17	2	1	1	0	1	0	51
Counseling & Guiding Students	10	6	0	0	1	2	3	0	0	22
Informing Parents	0	1	0	0	0	1	0	0	0	2
Reporting to District Officials, School Board, etc.	0	3	1	0	0	2	0	0	0	6
Comparing Groups of Students, Schools, etc.	0	1	0	0	0	1	1	0	0	3
Certifying Minimum Competency	0	0	0	0	0	0	0	1	0	1
TOTAL USE CITATIONS	101	74	63	16	11	19	33	10	3	330
Explicit Statements of Non-use	0	1	0	1	0	0	10	2	7	21

KEY:

A = Teacher Constructed
B = Teachers' Other Major Assignments
C = Curriculum Embedded
D = School/Department/Grade Level
E = Commercial Diagnostic
F = District-Objectives Based
G = Standardized
H = Minimum Competency
I = Statewide Assessment

Table 2

Importance of Test Results for **Teacher** Decision-Making in Elementary and Secondary Schools (Survey Data)

[mean ratings on 4-point scale: 4 = Crucial; 3 = Important; 2 = Somewhat Important; 1 = Unimportant or not used]

			ELEMENTARY		
Decision Area:	A	B	C	D	E
Planning teaching at beginning of the school year	----	3.39	----	2.53	2.60
Initial grouping or Placement of students	3.12	3.58	2.91	2.51	2.59
Changing a student from one group or curriculum to another, providing remedial or accelerated work	3.12	3.66	3.04	2.52	2.52
Deciding on report card grades	3.38	3.69	2.89	1.62	1.81
			SECONDARY		
Planning teaching at the beginning of the school year	----	3.59	----	2.22	2.38
Initial grouping or placement of students	3.04	3.84	2.48	2.28	2.46
Changing students from one group or curriculum to another, providing remedial or accelerated work	3.27	3.61	2.67	2.52	2.59
Deciding on report card grades	3.65	3.68	2.29	1.36	1.45

A = Teacher-Made Tests
B = Teacher Observations/Opinions
C = Tests Included with Curriculum
D = Standardized test batteries
E = District Continuum or Minimum Competency Tests

consider the results of standardized and district-objectives-based tests in curriculum evaluation? Table 3 suggests that they do. But interviews indicate that this often means that they merely glance over the scores, mention them in a faculty meeting, and point out the areas in which the school did especially well or poorly. Do teachers use standardized test results in planning? Apparently they do to some extent (Tables 1 and 2). Fieldwork suggests, however that, more often than not, this means a once-a-year visit to the office for quick look at their students' cumulative files. Are standardized test batteries and minimum competency scores consulted in student placement? Each table indicates that they are. But visits to schools make clear that they are most often consulted as part of an automatic or cursory gate-keeping procedure. Law or policy guidelines direct that students with scores below a certain cut-off point be placed in a compensatory program or remedial class. Alternatively, as one high-school teacher put it, describing a procedure reported by many offices:

> They give me each kid's standardized-test score on my class roster. If one stands out, I usually check with the counselor to be sure the kid should really be assigned to geometry.

Such uses contrast sharply with teachers' recurrent and systematic use of assessment that are local to the classroom and school in an on-going process of intructional planning and decision making. They contrast markedly with principals' serious consideration of teachers' advice, recommendations, and grades on teachers assignments in making budgetary decisions or next year's class assignments. And they certainly do not constitute thorough utilization of external testing data in a systematic process of school-wide analysis of curriculum and instruction, decision-making and planning.

Table 3

Importance of Test Results for **Principal or Schoolwide** Decision-Making in Elementary and Secondary Schools (Survey Data)

[mean ratings on 4-point scale: 4 = Crucial; 3 = Important; 2 = Somewhat Important; 1 = Unimportant or not used]

	ELEMENTARY					
Decision Area:	A	B	D	E	F	G
Curriculum Evaluation	2.94 (.84)	3.27 (.64)	3.01 (.67)	2.91 (.75)	3.04 (.87)	2.99
Student Class Assignments	2.93 (.79)	3.11 (.71)	2.50 (.81)	2.35 (.91)	2.46 (.99)	2.44
Teacher Evaluation	2.12 (.97)	----	1.70 (.76)	1.53 (.78)	1.80 (.93)	1.68
Allocating Funds	----	3.08 (.71)	1.91 (.87)	1.89 (.90)	1.94 (1.01)	1.91
Student Promotion	3.05 (.70)	3.29 (.67)	2.65 (.81)	2.31 (.96)	2.38 (.94)	2.45
Public Communication	2.31 (1.05)	----	2.77 (.90)	2.47 (.99)	2.34 (1.00)	2.52
Communicating to Parents	3.43 (.55)	3.45 (.57)	2.91 (.60)	2.64 (.98)	2.67 (.95)	2.74
Reporting to District	2.62 (.91)	----	3.12 (.68)	2.78 (1.10)	2.74 (1.10)	2.88
	SECONDARY					
Curriculum Evaluation	2.76 (.75)	3.14 (.70)	2.83 (.67)	3.27 (.64)	2.95 (.82)	3.02
Student Class Assignments	2.98 (.73)	2.99 (.79)	2.77 (.77)	2.98* (.87)	2.78 (.87)	2.84
Teacher Evaluation	2.39 (.83)	----	1.63 (.74)	1.77 (.71)	1.84 (.78)	1.75
Allocating Funds	----	3.34 (.54)	1.73 (.81)	2.20 (1.13)	2.06 (1.08)	2.00
Student Promotion	3.33 (.85)	3.46 (.75)	1.61 (.78)	2.58 (1.28)	2.05 (1.13)	2.08
Public Communication	2.24 (1.05)	----	2.84 (.80)	2.92 (1.03)	2.30 (1.07)	2.69
Communicating to Parents	3.56 (.55)	3.38 (.76)	2.91 (.58)	3.03 (1.00)	2.55 (.99)	2.83
Reporting to District	2.53 (.88)	----	3.10 (.64)	3.12 (.97)	2.92 (.95)	3.04

A = Results of Teacher and Curriculum tests
B = Teacher Opinions/Recommendations
D = Standardized, norm-referenced test batteries
E = Minimum Competency Tests
F = District Objective-based or Continuum Tests
G = Average External Tests (D,E,F)

Why do the two tiers of achievement assessment function in the different ways that they commonly do? The reasons are not hard to find. They lie in the interplay of several factors: characteristics of the measures themselves, circumstances surrounding their availability, educators' training in assessment and the organization of educational planning in schools, districts, and beyond. Examining these factors not only discloses why internal and external assessments are used differently in the schools. It also begins to reveal how each tier of assessment can be used more fully toward improving instruction -- and why district leadership is the key to this process.

Our system of schooling is organized such that teachers routinely do a great deal of instructional planning. They have a major role in planning what to teach (and/or emphasize) and how to teach it, in diagnosing individual students' learning needs, and in assuring that students are working at appropriate levels in the curriculum. As the school year unfolds, they need to monitor their students' progress, to consider whether and how to adjust the pace and emphases of their teaching, to grade students and inform parents of achievement-to-date, and so on. To do all this and do it well, teachers need assessment tools wth three basic characteristics: (1) Validity -- they must assess what the teacher believes he or she has actually taught in a way that seems consonant with the way he or she has taught it; (2) Suitability -- their intended purposes must fit the tasks the teacher needs to accompish, (thus teachers seek placement tests for placement, chapter and unit tests for monitoring progress and grading, etc.); and (3) Immediate Availability -- the teacher must be able to employ them

whenever it seems appropriate to do so and have the results back promptly. In short, the assessment tools that teachers need must be sensitive to local conditions, to the array of particular circumstances in their particular classrooms at the moment. And, in order to function throughout the year as the instructional leaders of their schools, principals need measures of the same kind. It is not surprising, then, that both teachers and principals rely heavily on assessment strategies that are internal to the school and its classrooms; teacher-made tests and assignments, teachers' observations and clinical judgments, and the adaptable, readily available tests that come with the commercial curriculum materials they are using. From their points of view, these internal measures have all three of the characteristics listed above. Externally mandated measures, on the other hand, usually do not. They are not designed primarily to provide data for routine classroom decision making. The fit between their contents and format and a particular teacher's curriculum is problematic. Often, their scores are not returned until weeks or months after administration. Often too, the results come back in a format teachers and many principals find unfamiliar and/or cumbersome. For any or all these reasons, the results of standardized tests, other minimum-competency measures, and many district-objectives-based tests can seem remote and irrelevant to teachers and principals. In addition, teachers and principals generally have limited formal training in testing and measurement or the use of test data (Herman and Dorr-Bremme, 1983; Yeh, Herman, & Rudner, 1978). This limits also the accessibility of external testing data to educators in the schools. CSE's Test Use Project field found teacher and pricnipals voicing

these very concerns as drawbacks of external testing (Burry, et al., 1982; Dorr-Bremme, in press).

But the very characteristics that make internal assessment tools ideal for use in individual teachers' and principals' routine work severely restrict their utility for systematic school- and district-wide planning. Their content and the timing of their administration is idiosyncratic, variable from classroom to classroom. Aggregating the data they provide in order to see achievement patterns across grade levels, a department or the entire school, therefore, is difficult if not inappropriate and impossible. This is especially true of teacher-made tests and assignments, but it also often applies to tests embedded in texts and other commercial materials. (Teachers time their administration differently; they sometimes adapt their contents. The same materials or text series are not always used throughout the school.) And while teachers' cumulative observations and experience-based judgments are valuable sources of information, they cannot be readily synthesized into a precise, detailed, picture of specific curricular or teaching strengths and weaknesses across many classrooms or schools.

It is these problems with local or internal assessment strategies that have made standardized, minimum-competency, and special district-objectives-based tests attractive to local school districts -- and make similar measures a virtual necessity for states and other educational agencies. By providing standard and consistent data across settings, such tests facilitate comparisons among classrooms, schools, and/or districts; they permit year-to-year monitoring of performance. They are likely to be more sound

psychometrically than teachers' own tests; in most circumstances they are sufficiently valid to indicate broad patterns and trends. Tests of these kinds can take time to administer, score and analyze comprehensively, but comprehensiveness is important to district and state planning, especially if data are gathered only annually or biannually. Coming full circle, however, the same features that make these types of measures useful to districts and larger education agencies generally limit their usefulness for teachers and principals. Thus, two tiers of achievement testing, largely distinct in their functions, are maintained in public schooling.

Both of these tiers could be used more fully than they now are as information sources in school-wide decision making and planning for instructional improvement. How? The data and analysis presented above suggest two approaches that districts can follow: <u>One approach is to build from the inside out</u>: to construct district tests that have the characteristics of internal assessment tools -- the validity for local curricula, suitability for routine classroom purposes, and immediate availablity that appeal to teachers -- and at the same time provide consistent, reliable data that can be aggregated in ways useful for school and district decision making. <u>The second approach is to build from the outside in</u>: to analyze information from externally mandated measures currently given in the district and deliver it to schools at times and in formats that maximize its utility in planning for curricular and instructional improvement.

These approaches are not mutually exclusive; both can be followed simultaneously. But the effectiveness of either depends upon more than the proper handling of testing and test scores. It also depends upon a

district system that structures and supports the use of testing information in an on-going planning process -- systems of a type that are not widely present in most districts today. On the whole, most districts do not routinely return test results to schools in ways that facilitate their use in decision making. Admnistrators review scores for the faculty in most schools, but rarely on a periodic basis as part of routine procedures. Follow-up to assure that teachers are giving attention to the content area, skills, etc., that test scores indicate need emphasis is rarely routine either. (See Table 4.) Survey data show that the majority of teachers are instructed in how to administer tests and that they are informed about test results. Yet it appears that few receive training in how to link teaching and testing or in how to use test results in improving instruction. (See Table 5.) These are only some very general indicators that not many districts are closing the testing-instruction loop with systematic planning mechanisms. They are supported, however, by fieldwork from both CSE projects. Furthermore, even though efforts of the kinds shown in Tables 4 and 5 are only the most elemental in a district testing-instructional decision making linkage system, they can make a difference in how teachers view and use testing. Analyses of survey data show that where there is more support by district and school leaders for the use of test results in planning, and where there is more staff development in assessment, teachers have a significantly more positive view of testing and its uses and tend to treat the results of district-objectives-based, standardized, and even minimum-competency tests as more important in instructional decision making. (Table to be included in final draft.) With this in mind, let's examine some ways

Table 4

Making and Holding Teachers Accountable for Test-score-Based Curricular Decisions (Survey Data)

	Principals' Reports*		Teachers' Reports*	
	Elementary	Secondary	Elementary	Secondary
SCHOOL ADMINISTRATOR(S) . . .				
Meets with teachers to review scores and identifies areas that need extra emphasis	3.09	2.94	2.84	2.05
Observes teachers, reviews their plans to ensure areas indicated by tests are being emphasized	3.23	3.07	2.66	2.31
Takes test scores into account in evaluating teachers and/or establishes test-score goals for teachers to meet	1.57	1.55	1.46	1.27
DISTRICT ADMINISTRATOR(S) . . .				
Returns test results such that they can be used in school's curricular decision making	2.63	2.03	Not Asked	
Observes, reviews school plans and/or requires reports to assure school is emphasizing skills that test scores show need work	2.84	2.67	"	
Establishes specific test-score goals for school	2.12	2.33	"	

*Mean ratings on four-point scale: 4 = happens regularly, routinely; 3 = not regular or routine but happens fairly often; 2 = not regular or routine and happens rarely; 1 = does not happen at all.

Table 5

Percentages of Teachers Reporting Recent Participation in Staff Development

Topic	Elementary	Secondary English	Secondary Math
(1) How to administer tests required by my state, district, and/or school (procedures to follow, etc.)	78	54	46
(2) Analysis and explanation of state, district, or school test results	84	70	60
(3) How to tie what is taught more closely to the skills, content covered on required tests	50	37	25
(4) Training in the use of test results to improve instruction	35	21	19

that districts can create successful links between testing and planning for instructional improvement in their schools.

Building Links From the Inside Out

Districts that follow this approach build outward from classroom assessment needs to those of the school and districts. They also build from what should be taught to what should be tested. First they construct district curricula, then district tests to match.

Two of the districts studied closely by CSE's projects were especially successful in taking this approach. Their slightly different testing-instruction linkage systems are useful models for others.

The Central City Model*

Located in the rural midwest, Central City School District serves about 5,000 students in seven elementary schools, three junior highs, and a high school. It has a long history of innovation and commitment to curriculum development. It also has a group of teachers who pioneered use of the high school's main-frame computers (originally purchased and used for computer-assisted instruction) in the scoring and analysis of teacher-made tests. These factors, and an energetic leader, joined in the creation of Central City's system for linking test information with instructional planning.

*District names used in this paper are pseudonyms. Any resemblance between these names and those of actual districts and communities is unintended.

The test information. Each summer in recent years, the district has sponsored curriculum development projects. But while the district initiated, compensated, and guided, it was teachers who did the work. Several representatives from the faculties of each school were selected by their peers to participate.

Efforts began with the construction of an elementary-grade media (or library) skills module and continued through the development of complete mathematics and social science curricula for the elementary grades. Later, the mathematics curriculum was extended through grade 8 and work began on a reading program. In each case, development was done unit by unit in several stages. First, teachers decided on instructional objectives and selected and/or wrote materials and learning activities for achieving them. Then, pre-and post-tests referenced to the objectives of each unit were designed and "mastery levels" for each objective were specified. Units and accompanying tests were piloted the next year; objectives, materials, and test items were revised in light of teachers' criticisms and suggestions. Further revisions incorporating teachers' feedback were made after the units went into general use in schools across the district.

Testing materials were designed such that all the unit tests could be scored and analyzed by computer and returned to the teachers in a day or two. Results came in the form of a set of easy-to-read sheets, one for each student. The sheet listed each objective covered on the test, the number of items that measured the particular objective, the number of these items the student had correct and incorrect, and whether the number correct equaled "mastery." At the top of each sheet appeared a paragraph that

described the types of errors the student had made and summarized the types of difficulties the student seemed to be having with the skills or content covered.

In mathematics, the district had selected a sample of items from the unit tests and combined these to create mid-year and end-of-the-year summary measures given to students in all schools. Teachers received summary sheets of the type described above for these tests, too. (The district was considering developing similar tests in other subject areas once the process of curriculum and test-item revision was considered complete.)

All this applies to the lower grades, but similar developments had begun in the high school mathematics department. These were initiated by the teachers, who had worked toward common curricula and devising computer-scored tests for various courses. In line with a general district attitude, other departments were encouraged, but not required, to follow this example.

The end results of the district-wide effort were several: (1) curricula that were consistent across the district, that teachers were invested in, and which teachers actually used; (2) a system of tests that fit the curricula and provided timely information in a form appropriate for a variety of routine instructional decisions; and (3) a body of test information that was valid and consistent from classroom to classroom and could thus be aggregated and compared in school and district planning.

The structure of school decision making. Within the schools, these test data came into play in two main ways. First, they were routinely used by teams of teachers in regular "unit" meetings. Elementary-school "units"

included several teachers (one of whom was chosen as unit leader) a cluster of students across two or three grades, and occasionally an instructional aide. Students were often divided among unit teachers in different groupings for different subjects based on their current level of achievement and rate of learning. (Some schools, however, tended to use the self-contained classroom approach for most students).

Unit teams met at least weekly during release time at the end of an abbreviated school day. At the beginning of the year, they discussed students' placement and planned instructional emphases and pacing. Later on, they routinely examined students' progress, reviewed their placements, re-evaluated and altered their teaching, and discussed individual learner's problems and how best to address them. Data from district tests, as well as other available information, were routinely examined as these matters were considered. Unit meetings, then, were the primary setting for linking test data with instructional decision making. (Where classrooms were self-contained, teachers reported using the district tests individually, as well as in unit meetings. And similar procedures were followed in the junior high and high school math departments.)

A second use of district test data occurred periodically as principals established school goals and agendas for school in-service activities.

District support systems. The linkage effort described above was supported by the Central School District in a number of ways.

First, district leaders initiated and provided resources for the curriculum-and-test development. They also gave release time for weekly unit meetings in which test data are used for instructional planning.

Second, district administrative leaders provided staff development in curriculum writing and test developent. Originally, these semester-long, weekly "courses" were led by professors from a state university. Later, however, the district encouraged teachers to take over the classes: to adapt them to be more practical and relevant and to serve as instructors. Credit on the district's pay scale was given for participation in these classes. A district administrator also maintained close contact with the nearby office of the local Intermediate Educational Agency (IEA). IEA help was routinely sought in problems in test development, and scoring-and-analysis issues. The IEA also provided some staff development in instruction.

Third, the district maintained media centers staffed by instructional specialists in each school. Specialists helped unit teams and individual teachers locate supplementary teaching materials to address learners' needs. They also offered training in such areas as instructional diagnosis and prescription.

Fourth, a district administrator worked with teacher committees in piloting curriculum units and tests, eliciting teachers' critiques, and revising objectives, materials, and test items.

It was this same administrator who encouraged continuing and broadening the use of the computer-scoring-and-test-analysis process.

The Shelter Grove Model

The Shelter Grove Unified School District is located in the southwestern region of the country. Until three years ago, Shelter Grove was an elementary school district. The recent merger has brought Shelter

Grove's enrollment to about 5,700. These students are distributed through four elementary schools, two middle schools (grades 6-8), and a four-year high school.

Shelter Grove's system for linking testing with instruction is similar to Central City's in several ways. Yet it is different enough to be worth description as a second "inside out" model.

The test information. Like Central City, Shelter Grove administers tests of several types. But those that have the greatest power to influence instruction in Shelter Grove schools are those developed by the district and referenced to its continua (or sequences) of instructional objectives in reading, mathematics and writing (composition).

Shelter Grove initially contracted with a commercial firm which promised to write test items for district-selected objectives and to provide computer printouts of scores. Introduced in the early 1970's, these tests failed to win teacher support. Teachers complained that they were not coordinated with anything that was taught, that they did not know what to do with the results.

Teacher committees were appointed to try to revise test items. They responded to the need for coordinating testing and curriculum by beginning to work on a district-level continuum of objectives. From then on Shelter Grove's experience paralleled the more recent history of Central City. By the late 1970's, teacher committees had devised continua of objectives and accompanying criterion-referenced tests for reading and math, as well as similar tests for language arts. More recently, a district writing continuum was established.

Unlike the Central City materials, Shelter Grove's tests do not serve as unit pre-tests or post-tests. And except in written composition, district objectives are not accompanied by district-designed materials or recommended learning activities. Rather, the continua are aligned with commercial reading and math text series used district-wide.

The district tests at the appropriate level were routinely administered to students by classroom teachers at two or three points between October and February. Scores were aggregated by the district's Testing Coordinator for individual students, instructional groups, entire classes, and the school. These profiles were sent to the schools in time for planning days that occur regularly at several points through the year.

In addition, proficiency tests composed of various segments of the district's criterion-referenced tests were administered to children in grades 4, 5 and 6 each year in April and May in accordance with state requirements.

The structure of school decision making. District tests were routinely used in each elementary and middle school during planning days that occur at several points in the school year. (The system has yet to be introduced in the district's high school.) Two of these days were in June. On the first, the program of the school was routinely evaluated by the entire school staff looking at the group, classroom, and total school scores. These sessions functioned as a needs assessment for the next school year. On the second June planning day, individual teachers placed students in appropriate learning groups for the coming year using the test-result profiles on each student.

In September of each year, test information was updated; information on students new to the district was added. In October, teachers met with their principals to set learning goals -- benchmarks on the continuum that, based upon past performance profiles, they expected the children in each instructional group to meet.

A mid-year evaluation took place each February. Summary reports on current-year testing were run, distributed, and examined. Principals met with teachers, as well as with the Superintendent and Assistant Superintendent for Instruction, to discuss students' progress. Plans for modifying the instructional program were made at this time. Then, in June, the cycle began anew with reference to the again-updated test-score profiles.

Individual teachers also used criterion-referenced test information in reporting to parents each October and again each spring. Report cards listed continuum skills on one side and noted students' progress toward each objective. And each May, letters were sent to the parents of children who were two grade levels behind expected performance; special conferences with these parents were also arranged.

District support systems. As was the case in Central City, a number of district activities and programs helped to sustain the linking of test data with instructional planning in Shelter Grove. In addition to the district's leadership and resources in developing the instructional-objectives continuua and criterion-referenced tests, these included the following.

The district maintained a Professional Development Program (PDP) that provided teachers with the skills necessary to act upon the test results. Coordinated by a full-time specialist, the PDP had evolved over time based

upon the Madeline Hunter orientation to teaching. Level One activities (for all new teachers, aides, and substitutes) dealt with such basic teaching skills as understanding goals and objectives, motivation and reinforcement, and task analysis and diagnosis. Level Two activities (which were not required but encouraged, and which many teachers took) extended those of Level One with emphasis on individualizing instruction. Strategies for meeting affective needs using inquiry skills, and teaching specific curriculum content were also covered. (Prior to the general implementation of this PDP program, all principals had been required to take the Level One course plus courses in clinical teacher supervision.)

PDP sessions require teachers to apply the skills taught back in their own classroom, with supervision and feedback from the PDP coordinator.

Learning specialists conducted demonstration lessons, recommended materials, conducted diagnoses of new students, and assisted teachers in planning and placement when new criterion-referenced test scores arrived in the schools. The learning specialists were considered master teachers, and regularly played an important role in helping teachers use test information. They also functioned to communicate changes in the continuum or changes in district policy to the faculty. With the PDP, learning specialists were perceived as critical supports to the district's linkage effort.

A Testing Advisory Committee composed of a principal and several teachers continually updated and improved the district's tests in light of teacher criticisms. This group also handled whatever administrative and technical problems arose in testing, scoring, and reporting back results.

Ad hoc continuum revision committees made up of teachers and learning specialists were paid during the summer to revise sections of the continua as seemed appropriate.

In addition to these formal organizational features, a variety of other networking activities (e.g., principal observations, learning specialists' visits to classrooms, monthly meetings of a district communications council) helped district personnel work closely together in maintaining links between test data and instructional planning in the Shelter Grove schools.

Guidelines

The experiences of Central City and Shelter Grove, especially in contrast to those of two other districts with similar but less successful linkage systems, suggest a number of guidelines for other districts interested in linking testing with instruction from inside out.

1. Build curriculum and assessment measures together "in-house."

Administrators and teaching staff in both districts believed very strongly in the district development process. They felt that it helped assure teacher "ownership" and confidence in both curricula and tests; these, in turn, seemed important as prerequisites to teacher use. Shelter Grove's unhappy experience with tests built outside the district, even when they were coordinated to district specifications, supports this wisdom.

2. Assure a close fit between test items and curricular objectives and materials.

This can best be done by designing curriculum first and then the tests, as was done in Central City and, ultimately, in Shelter Grove too.

Teachers are inclined to see district objectives-based or criterion-referenced tests as a burdensome irrelevancy if this condition is not met. New Branford, an urban district with 30,000 enrollment in the northeastern United States, attempted to devise criterion-referenced tests keyed to its district reading and math objectives. But when Test Use Project researchers visited New Branford schools, they found that few teachers used them. Continuum objectives were intended to fit with the five or six math and reading series used across the district. In fact, according to teachers, they fit well with none. Thus, teachers continued to use the tests included with these commercial series to get the information on achievement they needed -- and they also had to give district tests to comply with district requirements. But information from the latter was rarely consulted, and teachers resented the requirement. For similar reasons, Central City teachers neglected their district's objectives-based reading tests, although they were generally enthusiastic about those in the other subjects. Developed years earlier with little teacher participation, and no accompanying curriculum materials, teachers complained that the reading tests were not valid for the content of the two basal series used in Central City.

3. Strive for maximum teacher involvement.

To help build curriculum and tests that teachers own and use, teachers' participation in the development process must be more than nominal. Both Shelter Grove and Central City included many teachers on their development committees; these teachers did the real work of constructing the curricula (or continua) and the test items. Mechanisms were provided

that allowed all district teachers to offer feedback on a regular basis. Their criticisms were taken seriously in the revision process.

In contrast, New Branford (mentioned just above) and Metro District (another urban district studied by the CSE Test Use Project) had a small number of teachers on district advisory committees as they constructed continua of objectives and accompanying tests. These teachers did not participate in the actual development process; their presence was not visible to district faculty; they had little impact on the results. And in neither district did teachers feel the objectives or tests were completely suitable. New Branford teachers' response has been described. Teachers' response to Metro District's tests was quite mixed.

4. Make tests that cover the entire range of skills in the curriculum and/or continuum of objectives.

The district tests of Central City and Shelter Grove included items that assessed students' performance on skills and content from the most elemental to the most advanced in the subject areas tested. Metro District (enrollment over 100,000), in contrast, purchased tests for each grade level in reading, math, and language arts that covered only the most simple skills to be taught in the grade. In the economically disadvantaged neighborhoods where more students had trouble with these skills, test results did help teachers locate areas in which individuals and class groups needed remediation. But in these schools, the tests also functioned to push the actual curriculum in the direction of the most elemental skills. Teachers and principals wanted students (and their schools) to do well on the tests each spring. Thus, they spent much time drilling and re-drilling children on the simple skills tested. Simultaneously, they gave shorter shrift in

their teaching to other skills specified for the grade level, which were included on the test. Elsewhere in the district, where students routinely obtained 90 percent to 100 percent correct on the same tests, the tests yielded little diagnostic or placement information for teachers.

One moral of these contrasting stories, then, is test what you want teachers to teach, because teachers will place their teaching emphasis on what you test.

Several other "do's" and "don'ts" can be abstracted from the Central City, Shelter Grove, and similar but less successful models. These, however, are equally pertinent to the "outside in" linkage approach discussed next. Thus, they will be omitted here and mentioned in the concluding summary.

Building Links From the Outside In

Districts that follow this approach adapt information from externally mandated tests to suit schools' planning needs. In so doing, they support school-level planning structures and procedures, just as districts taking the inside out path do.

The testing-instruction linkage systems of two districts that followed the outside in approach are described below. They provide very different, but equally instructive models.

The St. John Model

The St. John School District covers a wide geographic area of suburban and semi-rural municipalities in a Western state. Its 72 schools serve between 40 and 50 thousand students in grades K-12.

Linking testing with instructional planning began in St. John during the mid-1970's when the state legislature enacted a program intended to stimulate planning for school improvement at local school sites. Participation in the program was voluntary, but over the years most St. John elementary schools, along with two of its junior high schools and one high school, elected to participate. The district encouraged this involvement; in turn, schools' participation occasioned district efforts to provide test data for use in local site planning.

The test information. Long before the advent of the state-sponsored school improvement program, St. John School District had required administration of the Iowa Test of Basic Skills. Students were tested each January in grades 2-6. The purposes this information had served previously are not germane here. But once numerous St. John schools joined the state program, test data became especially important for them. Guidelines for the state school-improvement planning process required that in establishing improvement plans schools specify: (1) the "existing level of performance" in a particular area, (2) the "needed program changes or additions," (3) improvement objectives, and (4) activities to measure these objectives. Major activities to be undertaken in order to achieve the objectives also had to be described, along with budgets and other improvement program features. But the four requirements enumerated here were those that called for "hard data" such as test results.

It seemed reasonable to use ITBS results in developing these improvement plans, yet district administrators realized that these came back from the test publisher in a form that was cumbersome. Computer printouts

presented the results for each sub-test area for each grade for each year on a separate page. Principals and teachers found these reports complicated as well as overwhelming in size. Consequently, the district undertook development of what it now calls the Academic Performance Profile (APP).

In summary, the APP gave each district elementary school an annual overview of its ITBS test results for all years and all grades for a particular subtest (e.g., reading comprehension, math concepts, etc.) on a single page. This reduces fifty pages of computer printout to approximately six ordinary $8^1/_2$ by 11 inch pages.

In addition, the APP simplified the format in which the information appeared. Simple graphs were devised to visually display : (1) the scores of student groups as they moved through the grades (1982 first graders as second graders in 1983, etc.); (2) the performance at various grade levels in various years (the fourth grade in 1981, 1982, 1983, etc.); and (3) the gains (indicated in terms of grade-level growth) realized from one year to the next for the various grade levels (the gains made from second grade in 1982 to third grade in 1983). Two simple tables on each page (i.e., for each sub-test) supplemented the three line graphs.

Since the state program guidelines also call for annual needs assessment, the St. John District also created survey questionnaires for staff, parents, and students. These solicited respondents' perceptions of the effectiveness of the schools' various programs, as well as their perceptions of how strong the need is to improve in the same areas. Each school can add up to 20 questions to those common across the district. Surveys are administered annually in the spring of each year. The district's

evaluation office tabulates those for each school and returns their results in a concise form.

The structure of school decision making. The state's school improvement program mandated the creation of a School Planning Council (SPC) in each participating school. SPC members had to include the principal and representatives of the teachers, other school staff, parents and other community members, and (at the secondary level) students. This group was assigned central responsibility for establishing needs, goals, and activities for school improvement, as well as allocating the state program funds provided to the school for improvement activities.

However, St. John's district evaluation specialists elaborated on these state requirements. They urged their schools to also create "component committees," smaller groups (including SPC members and others) who were charged with planning for improvement in particular areas -- in subject areas, in school environment, in human relation, in staff development, etc.

Component committees review the ITBS/APP summary forms, survey results, and other information. They specify and document needs, set objectives, and develop school and classroom activities to realize them. They also state how achievement of the objectives will be evaluated and propose a budget suitable for their plan. In a next step, various component committees present their particular plans to the School Planning Council. The SPC accepts or suggests changes in each improvement-plan component and makes decisions regarding final allocation of state program dollars among the various components. The SPC also monitors implementation of the plan through the coming school year.

While plans were routinely developed for a three-year period, revisions were made each spring based on information gathered during the current school year. Thus, school improvement planning was an annual process centered in the spring. But implementation in classrooms and SPC monitoring recurred throughout each school year.

Interviews with participants and observation of planning meetings indicated that test data (and survey results) were used in deciding upon and substantiating needs, specifying objectives, evaluating implementation, and revising the plans. SPC members also referred to this information in making and justifying budgetary decisions.

District support systems. The St. John School District supported its testing-instruction linkage system in many of the same ways that Shelter Grove and Central City supported their quite different ones.

Staff development in the organization and process of planning, including the use of the APP test summaries, was conducted for 600 district personnel during their first year in the state program. Others received this introductory training as they entered the program. Furthermore, teachers, principals, and parents agreed that the regular availability of the districts' two evaluation specialists was a key to the program's maintenance. They routinely provided staff development and answered ad hoc questions regarding planning and test-data use.

St. John also maintained a comprehensive staff-development program in instructional techniques. This was a major factor in facilitating the realization of school plans.

The Bayview Model

Bayview is a community of 100,000, and is located about 50 miles from

a major Western metropolitan area. The Bayview Unified School District's sixteen elementary schools, four junior highs, and three senior highs enroll 14,000 students.

Bayview's six-year-old effort at testing-instructional linkage was more diffuse than that in most of the other school districts visited by CSE researchers. Interest in testing and evaluation was relatively new, and many in the district were skeptical of their value. Nonetheless, the need to comply with externally mandated testing programs stimulated a small group of district administrators to try to make greater local use of them. Only one of these uses will be discussed here. It offers an example of "outside in" testing-instruction linkage that is quite different from the St. John School District's.

The test information. Three different achievement testing programs figured in the Bayview linkage endeavor to be described here. The first of these was the State Assessment Program (SAP). This half-hour test was administered each spring to students in grades 3, 6, and 10 in accord with state requirements. The test was devised by the state and referenced to objectives common to many state-approved text series. Items were matrix sampled; not every student was asked to respond to identical questions. Thus, data for individual students were not reported. Results focused on grade level and school patterns.

A second test used by Bayview was the norm-referenced, standardized Comprehensive Test of Basic Skills (CTBS). The district had just begun to require this test in all schools for grades 1-9 when CSE fieldwork was conducted. Formerly, it had been given only in schools with Title I (now Chapter 1) compensatory education programs.

The district's proficiency (or minimum competency) testing program was also used in testing-instruction linkage. Forms for grades 5, 9, 10, and 11 had been developed with the help of consultants to meet the state's mandate. These measures covered reading, writing, and mathematics skills deemed essential for life coping. The current forms of the test were introduced in 1978.

The decision-making structure. The data from these three tests was brought to bear on instructional planning in several ways by Bayview district leaders. Chiefly, however, they had begun to use the three test programs mentioned above as content for staff development course work in task analysis and diagnostic-prescriptive teaching.

District leaders had won grant funds from the state to create a Professional Development Center (PDC). The primary focus of the PDC's program was the continuing development of effective teaching strategies. A Teacher Center funded by a federal grant augmented the PDC. Curriculum development and the translation of educational research for practical, instructional applications were the central thrusts of the Teacher Center's program. The very presence of these two centers testified to Bayview's emphasis on teaching effectiveness skills. In addition, principals were required to attend workshops dealing with supervision, and these focused on the elements of effective teaching.

It was in the context of increasing external test mandates and the emphasis of staff development that Bayview's linkage system began to take shape. From the perspective of District leaders, Bayview teachers and principals were avoiding facing the issues raised by the District's

relatively poor performance on the external measures. In response, said the Director of Staff Development:

> We [at the central office] tried to model a problem-solving way of looking at it so principals could do similarly in their schools. The Director of Instruction worked with principals in the way he wanted them to work with teachers. Also, we asked teachers if they were addressing areas of the test. They said they were. When we observed, we found teachers had difficulty defining the skills to be taught as well as diagnosing for these skills. As a result, we built task analysis cycles into our Professional Development Center programs focusing on the low scoring skill areas identified by the State Assessment Program.

The district's cadre of leaders began by training principals to examine SAP (and later the other tests) to see what specific skills they assessed. Once these were identified, the next step was for principals and their faculties to examine school curricula in order to determine whether these skills were being taught and if so at what grades and with what emphasis. Staff development provided principals, and later teachers, with the information and techniques they needed to do this.

This was taking place with varying degrees of thoroughness in different Bayview schools when CSE's Evaluation Design Project staff made its several visits. At the same time, areas of curricular and instructional weakness district-wide had been identified by district administrators. These areas were then targeted for sessions on diagnostic-prescriptive teaching and other instructional skills.

Analysis of test results also suggested areas for emphasis in the development of continua. Citing the impact of proficiency-test skill and score analysis, for example, the Bayview Coordinator of Curriculum said:

> The proficiency exam has helped the district focus on curriculum... [We learned that] in math we teach computation but the test tests applications through story problems.

Thus, in the Bayview Unified School District, task analysis of tested skills served as the basis for a comprehensive examination of the district's curricula and suggested areas of curricular weakness. Simultaneously, analysis of test results led to the identification of teaching weaknesses. Links between testing and instruction were generated through the development of district-wide objectives and in Professional Development Center and Teacher Center programs.

Guidelines

The St. John and Bayview districts had put in place very different kinds of systems for linking the results of externally mandated testing with instructional planning in their schools. Nevertheless, it is possible to abstract a number of guidelines from their "outside in" models. Other districts would be well advised to bear these in mind should they follow similar approaches.

1. Make test score data comprehensible for teachers and principals.

Providing test results in a format that facilitates their use is obviously a key to testing-instruction linkage. That professional educators working in the schools can be bewildered and intimidated by reports of scores from externally mandated measures was clear in Test Use Project fieldwork (cited early on in this paper). It was equally apparent in the early experiences of district administrators in both Bayview and St. John. The latter addressed this problem by translating the scores into succinct, easy-to-read, and relevant tables and graphs. Bayview dealt with it by teaching principals and teachers to dissect the tests and test results.

2. Train teachers and principals to use test scores as diagnostic tools.

As noted near the outset of this paper, the results of externally mandated tests are commonly used in a brief and casual way to get a general comparative reading on group performance. The essence of their use in the St. John and Bayview systems was diagnostic. They played a role in identifying patterns of strength and weakness in particular content areas and skills. They served to stimulate questions such as "Why are we scoring as we are scoring in this area?" and "How can we improve?" Diagnostic uses are not routine in most schools. Simply presenting test scores in clear, readable format does not mean that they will occur. Teachers need teaching and practice in hypothesizing the different factors that underlie test performance. They need instruction and help in abstracting meaning from scores. Survey findings suggest that most districts do not provide this. In different ways, both St. John and Bayview did.

3. Expect that results of externally mandated tests will serve as only one source of information in planning and decision making.

Wisely, neither Bayview's cadre of leaders nor St. John's district evaluation specialists tried to make test results the sole basis for educational decisions. Human values and priorities do and should influence decisions about what objectives to pursue in school improvement or to build into district continua. The day-to-day experiences with students and observations of their work that teachers and principals rely upon so heavily are hardly irrelevant in making instructional decisions. These factors were routinely accepted, along with test data, as bases for decision making by St. John administrators as they assisted School Planning Councils and

reviewed their plans. Bayview's Coordinator of Staff Development, too recognized that test data needed to be examined in light of other factors. "When we see through our task analysis and curriculum review what we are and are not teaching, the next step is to ask, 'Do we or don't we want to teach this? How important is it for our students.'"

Data from externally mandated tests can serve to identify problems, to support or disconfirm experience-based judgments, and to stimulate questions. It can be used to justify or rationalize decisions that have already been made. But as the separate experiences of St. John (recall their needs assessment questionnaires) and Bayview (recall their juxtaposition of multiple measures to district curricula) indicate, test data in themselves are only one important source of information for educational planning.

Summary and Conclusions

CSE's national survey and its fieldwork in two research projects suggest that both testing that is internal to the school and that which is externally mandated can be used more fully in systematic educational decision making. Districts can build a curriculum and tests that can serve teachers' routine classroom needs and simultaneously provide consistent, reliable, and valid data for school and district decision making. Districts can also capitalize upon data from externally mandated testing by adapting it to local needs. No single approach or model will be appropriate to every setting. But whether a district chooses to pursue linkage from the inside out or from the outside in, there are several factors that will be necessary for success.

One of these is district leadership. In each district studied by CSE, there was an individual or a small group in the district office -- idea champions and supporters -- who were vitally interested in using test data in instructional planning and decision making. CSE's national test use survey substantiates that such leaders make a difference in school-level uses of test information.

A second element in district success is an organizational arrangement -- a setting and set of procedures -- for decision making. In Central City schools there were the weekly meetings of unit teams; in St. John, regular sessions of the School Planning Councils. Shelter Grove held its principal-teacher planning days in June, October, and February each year. In Bayview, the locus of linkage was staff development workshops, continuum-building committees, and regular school faculty meetings. These organizational arrangements motivated and structured the use of test results by creating (1) real needs for information, and (2) procedures by which the implications of test-score patterns could be discussed and acted upon. None of the field study districts with successful linkage systems simply offered schools test data and left their use to chance.

Third, each of the districts managed testing and/or test results such that they increased the marginal utility of test information for teachers and principals. Teachers routinely receive data on student achievement as they watch their students in class, review their assignments, and grade classroom tests. This data is immediate, rich and compelling. So too is the information principals regularly gather as they talk with staff and visit their classrooms. To be as useful and as compelling, external test

information must add "something new" to what teachers and principals already know. Each of the four models described above did this. Central City's computer-scoring-and-analysis system for unit tests summarized individual students' mastery of objectives, as well as their errors and weaknesses. Shelter Grove compiled data on the progress of individuals and instructional groupings toward benchmark goals. St. John's Academic Performance Profiles charted year-to-year trends and annual gains. Bayview's task analysis projects based on tested skills and test scores helped to reveal why and how students' performance was what it was. In each case, test data was configured in ways that told teachers and principals something more than "your students are doing well in this and not so well in that" -- which is information teachers and principals typically feel they already have.

A fourth and final element in successful district linkage is the maintenance of on-going resource and support systems. In the districts studied, these centered in the area of staff development: training in test development and use, training in how to realize instructional goals derived from test information, or both. Frequently, too, instructional support staff -- learning specialists, media specialists, evaluation specialists -- were routinely available to provide help and answer questions. Support also took the form of adaptability and flexibility on the part of district administrators. Clear channels were open for Central City and Shelter Grove teachers to participate in the development of and criticize the quality of district curriculum and tests. St. John's evaluation specialists revised district needs-assessment surveys in light of teachers' feedback;

local schools could add survey items suitable to their particular concerns. Bayview district leaders showed patience and understanding in encouraging principals and teachers to take a "problem-solving approach" to low test scores. And of course, each district supported its testing-instructional linkage system with release time and other resources.

The models and guidelines suggested here will not answer all the questions and concerns school districts will encounter as they work to link testing and instruction in systematic ways. But they do indicate productive directions to the more efficient use of testing and the improvement of education planning in American schools.

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THE SEARCH FOR CONSEQUENCES: ASSESSING THE IMPACT OF DISTRICT INSTRUCTIONAL INFORMATION SYSTEMS

by

Adrianne Bank and Richard C. Williams

Background

Before we came along, Lenny, the Research Director in North District, and Don, the Testing and Special Education Director in South District, didn't know that their respective districts had given birth to instructional information systems. Each knew only that his district had spent considerable time and attention on methods for combining student achievement test scores with other district data so as to produce information useful for instructional planning and management. Each knew that, for the past five or six years, he had worked with other key central office staff to provide information, training and support to school-site groups and individuals.

For our part, we at UCLA's Center for the Study of Evaluation had, for several years, investigated what school district research and evaluation offices did (Lyon et al., 1978). We had discovered that most R&D personnel spent much of their time administering district-wide testing programs and conducting mandated state or federal evaluations. We found that policy making, administrative decision making and classroom operations were rarely affected by the work done by the R&D unit. In re-analyzing our questionnaire data, doing further interviews and reviewing the literature on school districts as organizations, we discovered a number of reasons for this phenomenon (Bank & Williams, 1981a). Many school districts

exist in a socially turbulent environment where critical factors such as annual budget levels, numbers of students, placement of students in schools, and personnel matters relating to principals and teachers, are not exclusively in district hands. Outside forces are often overwhelming. Furthermore, the internal controls that central office staff exert over school principals and classroom teachers are "loosely coupled" (Weick, 1976). That is, teachers are quite autonomous "behind their classroom doors" (Lortie, 1975). Schools each have their own community and culture; although districts differ, most have no strong guidelines as regards teaching methods, although most do have general guidelines for curriculum. Given these features, it is unusual for school districts to plan and carry out systematic and centrally-directed activities relating to instruction. Because there is an absense of such centrally-coordinated instructional decision making, it is not surprising that centrally collected testing and evaluation data are regarded primarily as useful signals to funding agencies that the school district is complying with program evaluation requirements (Zucker, 1981).

Nonetheless, there are exceptions; there are districts where district-directed testing and evaluation activities are linked with instruction. Lenny's district and Don's district are two of the eight "heroic" districts that we studied over the course of several years. In these districts, particular factors in the external and the internal circumstances of the districts -- including strong leadership, a critical mass of supporters, a benign environmental setting -- facilitated the central offices' assuming a role in the improvement of instruction (Bank and Williams, 1981b, 1982). In Lenny's and Don's districts, the district central office

provided relevant, timely and easily understood data to key decision makers (e.g., district administrators, principals and teachers).

While we were conducting our case studies in Lenny's and Don's districts, it occurred to us that there was a relationship between the information systems they were developing and the management information systems discussed in the business community. Our investigation into the management information research literature revealed that there were indeed parallels. In our view, the parallels overshadowed the differences. And so we coined the construct "instructional information systems" (IIS) (Bank & Williams, 1983). Instructional information systems (IIS) may not be pictured on an organization chart, but they can be described in terms of an observable set of components: specified users, specified uses, specified data inputs and outputs, a delivery system with particular format and timelines, and a monitoring and feedback mechanism.

Once having concluded that such systems in either complete or incomplete form do exist in districts, we set out to examine certain features of those systems. We used Lenny's and Don's districts as field sites. In another article (Catterall, 1983) we looked at the costs associated with Lenny's and Don's systems. In this paper, we will be specifically concerned with the impact district instructional information systems have on the individuals they are intended to serve.

Questions of Interest in Assessing Impact

Our interest in studying the impact of a district-operated IIS on system users is a natural one. Given the commonplaces in the educational

administration literature that, in loosely coupled settings, policies mandated from the top are considerably altered as they filter down to those expected to implement them, we were curious as to what might be the impact of Lenny's and Don's systems on teachers, principals and parents.

Our major question, therefore, was "What is the impact of the instructional information systems in these two districts?"

Before thinking about what procedures we could use to answer this question, we had to answer several prior questions for ourselves.

Question #1. How should the impact of an IIS be defined?

Considerations: The ultimate expectation in both districts is that the instructional information system could increase student learning as measured by total, subgroup, or individual changes on achievement test scores. However, the causal linkage between information provided to adults, who then make well-informed decisions which lead to improved classroom practices which, in turn, lead to increased student learning showing up as higher test scores was very weak. We decided that we could not identify the impact of an information system simply by tracking student test scores over time.

Conclusions: Instead, we focused only on the intended users of the instructional information system -- those adults to whom the district supplied information. We defined impact as composed of the attitudes of individuals and groups towards the information, and their behaviors in relation to the information, e.g., how they felt about it and what they did with it.

Question #2. How should impact of particular kinds of information supplied by the district be distinguished from other information used by individuals to make instructionally-related decisions?

Considerations: It has been pointed out that the single decision maker making a particular decision at a given point in time using a limited set of data is an unrealistic view of how people in organizations operate (Alkin, et al., 1979; Cronbach, et al., 1980). How then could we separate out the influence of the district aggregated and distributed information from the "working knowledge" (Kennedy, 1982) that such people already possess?

Conclusion: We decided that our respondents themselves would be the best judges as to what influenced their thinking. We would ask them to discuss a decision that they had made using district-supplied information and estimate the importance of that information in their own decision-making. We would also ask them about the particular contribution of each aspect of the IIS.

Question #3. How should "ripple effects," often termed unanticipated, unintended or secondary impacts, of the instructional information system be identified and described?

Considerations: These impacts, we believed, would not be part of the "official" story that people told spontaneously. These effects would have to be inferred, carefully, by researchers using interview data, cross-checked with observations. However, we wanted to capture the ripple effects because they would shed light on the informal, daily life consequences of instructional information systems.

Conclusion: We decided to include in our interview a list of possible "ripple effects" and ask respondents to react with any examples that occurred to them. We also asked them to imagine what they and others would do if the district-supported IIS was disbanded, either partially or completely.

Methodology for the Study

Issues. A number of factors influenced the way in which we approached the study of impact in the North District and the South District.

First, we wanted to establish collaborative relationships with both Lenny and Don, with whom we had previously worked, in order to make the study of use to them as well as to ourselves. Since the IIS had been in place in each district for a number of years and since it appeared to be operating smoothly and without major problems, neither Lenny nor Don was motivated to assess impact without our outside impetus. Each had his own concerns that the study might needlessly raise teacher doubts or anxieties about the system; or perhaps surface expectations for additions or changes that they would not be able to act upon because of other district priorities. Together with Lenny and Don, we discussed how to "position" the study in the eyes of the respondents so as to minimize the potential risks that Lenny and Don saw, and how to frame the interview questions so that Don and Lenny too, might derive useful information from our data.

Second, we wanted to design a simple procedure that would be appropriate for use by other districts who desired to do their own impact studies.

The methodology therefore needed to be inexpensive, short-term and acceptable to participants.

Sample. In each district we selected sample schools where implementation was assured -- that is, where "everyone knew" that individuals and groups were aware of and were using district-supplied information for decision making. In Lenny's large district, we selected five elementary schools of varying sizes, and one high school. In Don's smaller district, we interviewed in all seven elementary schools.

At each site, 8-10 individual teacher and parent respondents were selected by the principal of the school in accordance with our request for a variety of perspectives, experience and attitudes towards the IIS.

Instruments. We considered and rejected questionnaires as impractical because of the difficulties of getting a high rate of return and because they would be more high-profile than both districts wished. Interview schedules with the same format were developed but they were individualized for each school. Respondents were asked about their own background; then they were asked to reconstruct a decision or a process which involved them with the district's IIS; they were asked to identify the importance of each system element in that process; finally, they were asked to react to a number of possible "ripples."* We then asked how they and their group would react if the district discontinued the IIS; and finally, we asked them to add anything else they thought would be of interest to us.

Analysis and Implications. Interview notes from each district were transcribed and analyzed, site by site, to determine school variations.

*See Appendix for Interview Guides.

Within-district themes across schools were also identified. However, comparisons of the districts with one another were not appropriate as the two instructional information systems differ from one another in terms of intended purposes and operations.

North District: Assessing the Impact of the District's Instructional Information System

PURPOSE OF THE SYSTEM

It should be noted at the outset that while the North District's IIS was originally generated at the school district level and currently remains a central administrative responsibility, the purpose of the system is to provide planning-relevant data and a planning and decision-making procedure for local school site councils. The decision-making responsibility resides at the local level -- the district merely facilitates the local decision-making and planning process. It follows that questions about the impact of district's instructional information system should focus upon whether or not this system does indeed influence local school site councils in the way it was designed to do.

The central office collects pupil achievement data and needs assessment data, processes those data and fashions them into sets of easy-to-read tables with accompanying narratives. These easily allow school site councils to determine trends and identify strengths and weaknesses in the school's program. The district has adopted an implicit, linear decision-making model that has several discrete stages. Data from the district system can presumably have some influence at each stage of the decision-

making or planning process. The decision-making stages and the role of data can be briefly described as follows.

1. Problem identification and clarification means determining if there are shortcomings or problems at the school and once having identified such problems, initiating programs or activities that would be expected to solve or reduce the problems.

Of course, many people involved in a school can perceive that there are problems in their school. Often such perceptions are based on a single experience or hearsay. And often, based on such ill-informed perceptions, schools launch reforms or changes. The goal of North District's instructional information system is to make data-based decision making more systematic, comprehensive and objective.

- Needs assessment survey data, collected from large numbers of parents, educators and students, can identify whether there are commonly perceived problems, the strengths of those perceptions and the degree to which they are commonly held among the various constitutent groups. Such data reduces the likelihood that one influential individual or group of individuals can overwhelm others with its version of what the problems are.

- Similarly, norm-referenced test data can be used to identify possible weaknesses in the instructional program. If 3rd grade students' spelling scores, for example, are below a desired level, the reasons for this might be explored. They could range from a spelling text-test mismatch, to lack of pupil instruction, to inadequate amounts of instructional time.

- Of even greater potential decision-making and planning use is the interrelationship between the needs assessment data and the test score data. That is, one could see if there were parallels between commonly held perceptions of the program and the test data.

2. Solution generating and solution selection. Once a school site problem has been identified or clarified, one might next move to generalizing solutions and then making selections among the generated options.

These data, particularly the needs assessment survey data, can be especially useful in this regard. School site council members, empowered to develop solutions, can represent parent as well as teacher (and, in some cases, student) thinking. Informed voting should result in the selection of a useful solution.

3. Program/activity evaluation and monitoring. Once a decision has been made and a program or activity has been implemented, test data and opinion questionnaires can be very useful in determining whether or not the intended outcomes were realized. For example, picking up on the earlier instance of low test scores in spelling, suppose one of the school site councils in North District had decided to provide a creative training program for teachers on how to effectively teach spelling. The Council might reasonably expect that such training would ultimately result in better pupil achievement, which would be reflected in the students' achievement on a standardized test. By observing the test scores for subsequent years, the school site council might have an information base to supplement teacher judgments and student homework to ascertain the effects of its policy. Similarly, differences in the annual needs assessment regarding the respondents' perceptions about some previously identified problem could provide another information base.

In summary, the district should expect the impact of its instructional information system to be felt at three levels: problem identification and classification; solution generation and selection; and program/activity evaluation and monitoring.

IMPACT OF THE SYSTEM

We now turn to our findings with regard to primary and secondary impacts of the district's system; and we report the ripple and unexpected impacts of the system.

The reader should note that we are looking at the impact this IIS has on the decision-making and program implementation activities of the school site council. We are not looking at the ultimate consequences of the decisions that were made. To illustrate -- we are looking to see if a school site council's decision to spend money on inservice training for teachers in, say, spelling instruction was influenced by data provided by the district's IIS. We are not looking to determine if the inservice training of teachers ultimately has its desired effect, namely improving the pupils' spelling ability. This latter -- ultimately the most interesting and important question -- is beyond the scope of this study.

1. Problem identification and clarification. If the district's IIS were fully working as designed and intended, one would expect that the needs assessment survey of staff, parents, and pupils and the annual ITBS results would be used to identify those weaker programs and activities in need of school site council attention and funding.

In each of the six schools we visited, we asked the respondents to recall a major decision that their school site made during the 1981-82 academic year and to reflect on how members had come to identify that area or concern. The impression that emerges from the six schools is that the test data played only a minor role as a means by which the schools identified the needed improvements. The survey data also played a minor role, being used to bolster an argument or proposal that had been advanced by a

faculty member or group. One school site council, for example, decided to invest in a science program. This decision was made due to the argument of one teacher who had a strong interest in enhancing the science program. Three schools' site councils had decided to purchase computers for their schools. In all three instances they had been influenced by a faculty member or administrator who convinced the council that purchasing computers would be a wise use of funds. In another school the school site council decided on a multi-cultural mathematics instructional program. This program had been tried in other district schools with some success and teachers pushed hard, and successfully, to have the program funded in their own school.

Thus, from the sample six schools we saw little evidence that either the test data or the needs survey data played a decisive role in the school site council's decision-making processes as regards the major items we discussed with them.

While the respondents did not identify the information supplied by the district as having a decisive role, they did identify several instances where the surveys and the test data alerted them to special needs that required additional funding. The following are some examples: One elementary school changed their math books on the basis of ITBS test scores which indicated lower pupil performance than expected. Another school uses a participative, non-hierarchical decision-making procedure and administrative structure, where teachers and parents are regularly involved in the school's instructional decision-making. Here, the district's information system has been thoroughly integrated into the school's decision-making style. Everyone is so used to this model that it is difficult for them to

see where their own system ends and their needs for district-supplied data begin. They cannot conceive of operating their school without either system.

We do not know of all the instances where the district-supplied data may have been used in identifying needs. It was clear that in five of the six schools, school site committees were following the recommended district decision-making model and were looking at the survey and test data. Although the impact of these data was not as clearcut as we had expected, it was obvious that people were familiar with them and consulted them when making plans and decisions.

One explanation for this is somewhat less-than-consensual use of the system is that this procedure is carried out annually and has now become an established way of identifying problems over several consecutive years. Because the data from year to year do not change very much -- that is, test scores do not fluctuate very much and parent and staff opinion probably remains quite stable -- the school site councils continue to fund programs they identified in previous years. And thus, when we asked about one year and about one decision, we did not surface dramatic uses of the data for problem identification purposes. However, it is likely that data-based decision making has had a cumulative effect on the participants in the school site councils. They might be very concerned about making major decisions without a quick check of the data to see if they contained any strong contra-indications or problems demanding more immediate attention.

2. Solution generating and solution selection. If the district's instructional information system were working as designed, one would expect that the school site council, or more often, the component committees of

the school site council would comb the surveys and norm-referenced test data for their implications as to solutions to the problems identified in the first part of this decision model.

This did not turn out to be the case. With regard to the major decisions that we explored with our respondents from the six schools: their decisions were not based on needs spotlighted by the data nor were the solutions necessarily implied by these data. For example, the decision to start a Math-Physical Education flip-flop schedule was based on teachers' awareness that this program had been used successfully in other schools in the district. The teachers were experiencing a problem in teaching math. They thought class sizes were too large. They knew that other schools had resolved this problem with the "flip-flop" and they persuaded the council to spend its money to implement such a program.

In the schools that decided on purchasing computers, there appeared to be little searching for other options. In one school, the council wanted to "have the most computers of any school in the district." In part this desire was an answer to their perceived need to compete successfully with a nearby private school. But data about parent preferences or student performance had little influence on this decision. In another computer-purchasing school the decision was motivated by the fact that a group of rapid learning students were coming in to the school with their own classroom computers. Largely in response to this, the school site council decided to invest in computers for the remaining students.

It is important to note, however, that this school site council felt the need for data to help with a related decision. There was a split in the council as to whether the school should invest in computers or air

conditioners (the newly arrived rapid learners also had their own classroom air conditioners). This dilemma was resolved when the school site council devised its own parent questionnaire on this specific question. The final decision choice was based on the results of that survey. Thus, while the results of the district's survey were not used, the district's survey method was indeed used in resolving this dilemma. Thus, in a very real sense, it can be said that the district's surveys affected the search for that solution.

The decision to invest money in more teacher aides in another school was not influenced by data; indeed, the needs survey data did not contain anything which would bear on that decision. The council went along with staff ideas about what was important to help the teachers in their work.

With regard to the smaller decisions that are made by the school site councils' component committees, one senses that data are sometimes used to identify problem areas but that the selection of the solution does not arise from exploring the implications of the data. Instead the component committees select solutions based on common sense or on what other schools are doing.

It appears in some schools that decisions of where to allocate funds are based in part on making sure that the various curricular components of the school site council have their "fair" share of the money. Once an equitable division is decided upon, the component committees determine how to spend the money. The small amount of allocated funds does, of course, limit the range of solutions they can consider.

Our research methods may well have limited our perceptions of the effect the district's management information system has had on the school

site council's decision-making processes. It may well be that what we perceived as a very limited search for alternative solutions may indeed be the residual from very extensive alternative-solution searches that were conducted in years past. And likely the limited amounts of funds now available to each component reduce the tendency for heroic, wide-ranging flights into generating unconventional alternative solutions.

3. Program/activity evaluation and monitoring. If the district's instructional information system is working as designed and intended, one would expect that the data from both norm-referenced tests and the surveys would be used by the school site councils to assess whether previous activities and programs had achieved their desired effect. For example, if a component committee had funded the teacher in-service training program in spelling to improve the quality of spelling teaching, one might expect that the students would perform better on subsequent spelling tests or that the parents' or teachers' attitudes toward the need for spelling improvement would change. Such information probably should influence council decisions regarding the future continuation of the program.

With regard to the major decisions we saw little evidence of the data being used that way. The respondents had some firm ideas about whether or not their council's programs had been implemented and about their relative success -- but the district-generated data didn't play much of a role in determining those opinions.

For example, one school had implemented staff development programs. At the time we visited the school, our respondents reported that the in-service program had indeed been implemented but was not having its intended impact; there was considerable disappointment with the results. The

respondents seemed to base their opinion on their own experience in the program and on conversations with colleagues who had also participated, rather than on parent survey responses.

In a school that had earlier adopted a Math-Physical Education and Multicultural "flip-flop" they decided to drop the program even though many people felt it had been successful. The basis for the decision was that the teacher who was responsible for the program became "burned out" and no longer could continue in that position.

In some activities and programs, e.g., the computer purchase, there appears to be no felt need to have exhaustive data. For example, once the computers are purchased it is unlikely that that decision will be reversed in the forseeable future. Nor is it likely that the computers will have any measureable impact on test scores or parent and staff attitudes for several years, if then. Again, the survey may eventually pick up future changes in knowledge and/or attitudes but the decision to actually buy a computer or additional computers will probably not be affected by such data. It may affect the priorities for use and types of computer programs employed, but it is too early to detect any trends along that line.

With regard to the "smaller" decisions made by the school component committees it is likely that the test and scoring data are used to monitor programs' success more in some components than in others. Some respondents talked about how they would "set a target figure for an increase in satisfaction level" but no mention was made about whether or not much attention was given to whether or not the target was hit -- and the subsequent consequences of this relative accuracy. In that same school, a respondent stated, "We compare this year's figures to last year's figures.

If we stayed the same because our scores were high we don't need to change anything. But if there was a drop in scores, we set a percentage goal, and we ask what it is that we have to do to get better scores, is what we are doing worthwhile?"

Because of the large number of component committees in the several schools we visited, it is very difficult to give anything more than general impressions about the extent to which the data were being used to monitor the effects of decisions previously made. Clearly, these data were being used in this way in some schools and in some component committees. Many respondents simply did not comment on this function and it is difficult to attach meaning to this. One reason for this might be, indeed, that the data simply are not used for this purpose but are used more in originally deciding to spend money on a particular activity. It is likely that some decisions, such as hiring teacher aides, do not result in measureable differences and thus, these data are not very valuable in assessing impact. In other instances, it may be difficult to extract the use of such data from the regular flow of decision-monitoring-revising-decisions that characterizes the functioning of some school site component committees.

In summary, this monitoring question appears to be a regular part of the decision process in some schools and component committees. However it did not surface in revising and monitoring the large decisions such as computers, Math-PE-Multicultural "flip-flop" and the science curriculum program.

OTHER IMPACTS

In the preceding section we discussed how the district's instructional information system, i.e., providing school site councils with the test and survey data, has impacted on the decision-making process in the councils. Here, we turn to impacts that may not be directly related to a data-based decision-making process. The impacts we noted from the open-ended responses can be categorized into communication, parent participation, school culture and climate.

1. Communication. Common sense would lead us to believe that an information system has high potential for improving or enhancing the level of communication in the school both within and among the various constituent groups (parents, teachers, administrators, pupils). There are several ways it might have a practical effect.

A. Provide a common language or common data base that can be tapped into by the various groups. A common complaint about educators is that they have their own professional language and culture and this makes it difficult for those who are not a part of that culture or who do not fully understand the professional language to communicate very effectively, (e.g., parents, pupils). The district's management information system has a powerful potential for bridging this communications gap in that all the participants have the same data -- and those data are arranged in such a way that they are quite clearly understandable to the various constituent groups.

B. A second, related effect is that it reduces the potential control of those who have sole access to initial information. Thus, as is often the case with school site councils, the principal's or staff's potential ability to manipulate events is minimized because

critical information is also available to other decision-making or planning participants.

C. It essentially forces various constituent groups to come together, to access a common data set and to reach consensus. In this process, perceptions are shared, ideas are explored and decisions are reached. This results in bringing together people who might not otherwise work together in such an intense way towards common goals. The effect is that erroneous perceptions each constituent group might have for the others are reduced or corrected somewhat.

D. Finally, it results in a communications network in that each member of the school site council and its various component committees has his or her own groups of friends and acquaintances with whom to share information about the school's activities and their perceptions of people and events in and around the school. This network can help to break down communication barriers and enhance the level of school-community relations.

In visiting the schools, we saw evidence of these activities in most schools; the level of influence the instructional information system had on each school varied depending on circumstances and motivations.

In the high school it had considerable effect, particularly in bringing people together -- people who typically do not meet to discuss school plans and activities. Parents' interest in participating in school planning typically falls off at the secondary level. But the school site council provided an avenue and means for including some parents wishing to be involved in decision making. Similarly, the high school's typical division into subject matter specialists and departments tends to reduce inter-

faculty involvement in school-wide activities. The school site council tended to encourage such cross-departmental communications.

In one relatively non-graded elementary school the district's instructional information system served to enhance and support an ongoing, high level of faculty communication. The school's design and operations already encouraged considerable internal faculty communications -- this district program empowered the already extant system to be even more effective by providing vast amounts of useful data.

In other elementary schools it brought together parents and teachers into problem-solving groups that used the data to identify and attack problems and to enrich the school-community relationship.

But the existence of this system did not guarantee that this happened. In one school the main purpose seemed to be a means whereby the faculty could purchase additional items and people to enhance their teaching. This, of course, is not an indesirable effect, but the program as practiced in this school virtually ignored the parents and minimized the teacher cooperative decision making. Instead, the faculty divided up the allocated money and bought what was viewed by each individual teacher as best for him or her.

In summary, we saw the instructional information system having varying effects in the schools depending on circumstances. Overall, it seemed to have a strong impact on communications but that impact was not guaranteed -- individuals in the school had to value the data and believe in the system's decision-making and planning model.

2. Parent participation. As has been noted in the previous section on communications, the district's instructional information system brings

various constituent groups together (teachers, administrators, parents, pupils). Thus, parents are included as a part of the school's decision-making body -- at least as concerns the expenditure of SIP or Chapter 1 funds.

The school site council membership is mandated by law and is quite similar from district to district. But, as has been previously pointed out, being on a school site council should not be equated with participation, that is, often such councils are dominated by the professional staff. What is unique here is that the parents, through the systematic provision of data in a concise and understandable form, enhance the likelihood that parents can actually participate in the school site council's planning and decision-making process.

The varying level of parent participation has been noted previously. Perhaps it is sufficient to say that these data, presented as they are along with a decision-making model, seem to have had the desired effect on increasing parent participation in those schools where the staff has an inclination to include parents. In our sample of six schools, we would conclude that parent participation was adequate in five of the schools. One note of interest: all the schools reported difficulties in maintaining the appropriate level of parent participants largely because women, who are the main participants, are increasingly working during the day and unavailable to participate.

3. School culture/climate. The district's instructional information system might reasonably be expected to impact on the decision-making processes and it is not surprising that it influenced the communications pattern and interactions and affected parent involvement. Here we discuss

that we really hadn't anticipated, namely the culture of the school. It is this to which we now turn.

Typically, school teachers, administrators and parents are not known for utilizing data to identify problems, determine solutions and implement plans or decisions. Indeed, the more common portrait of teachers is that of working alone behind their closed classroom doors. Principals are often portrayed as being more preoccupied with administrative matters than with instruction and programs. Staff meetings more often deal with management and budgetary matters than with instruction or program items. These program, curricular and instructional changes or developments that are made are seldom influenced by test data or any comprehensive set of survey data. Teachers spend their time alone in the classroom; principals busy themselves with administrative and management concerns. Programmatic-planning is minimal and generally uninformed by data collection. Parent involvement is often limited to fund raising, and sponsoring and running various school activities through the PTA or at the classroom level through "class mothers." Clearly, the district instructional information system has changed this standard culture in the schools we visited. Some of these changes have been noted, e.g., communications patterns, parent involvement, decision making. But another important change or impact was also observed, one that is not quite included in these activities. For lack of a better term, we will call it a spirit of inquiry -- orientation toward problem solving -- a bias towards data.

We saw this impact time and again as we observed school site councils at work and as we gathered the perceptions of those who participated in these activities. The component committees seemed to constantly refer to

data when reaching decisions. This is not to say that the data provided by the instructional information system was always critical to the decision. To be sure, other factors such as personal opinions, professional judgments and strong advocates often prevailed. Sometimes, the data merely corroborated what the group wanted to do anyway. But collecting and analyzing data had clearly become something the participants valued and indeed were comfortable with.

Perhaps this approach can best be illustrated by the events in two schools. In the sample high school, they were wondering about whether or not to support a staff development program in the school. Faced with uncertainty over whether there was support for such a program, the staff devised its own survey questionnaire which was distributed to all faculty members. (The district questionnaires did not adequately cover this topic.) The resulting data was analyzed and the program decision was made on the basis of those data.

In one of the elementary schools, the school site council was faced with a choice between buying air conditioners (for year-round classrooms) or purchasing a school computer. The results of the district questionnaires did not give insights into such a specific question. The school site council devised its own questionnaire and, on the basis of the results from staff and parents, decided to purchase the computer. Other examples abound. One elementary school has devised its own student survey which is distributed regularly and the results are considered when making funding decisions. Another school has used the data when writing proposals for funding from private sources and state agencies.

Not all of the data are used equally, however. We found very few respondents who referred to the ITBS scores when making decisions. There may be several reasons for this: the district's test scores tend to be uniformly quite high and, thus, the scores do not attract the attention they would if they revealed glaring deficiencies. Also, the pattern of test scores probably does not shift dramatically from year to year. Given the eveneness, one would expect that there would be little likelihood that the scores would underscore major deficiencies. Finally, the test scores fit into a pattern -- a stream of data, if you will -- and probably the test scores figured more prominently in decisions when the program was begun in each school. Because we didn't see them used now, it does not follow that they were not used at an earlier point in the program's history. The scoring data was used far more extensively, but even here some data received more attention than others. The parent survey data received the most attention largely, we suspect, because it frequently was the only systematically collected, comprehensive data set of parent opinions regarding the school. There is no other way available to collect such data. These data appeared to be examined quite carefully by the school site council. But the data were not without shortcomings. For example, the percentage of sample returns was sometimes quite low -- below 50 percent. Also, some teachers felt there were validity problems and sometimes the parents were responding about things of which they had little knowledge. For example, in one school the parents said that the home economics program needed improvement. Subsequently, the home economics program was completely dropped from the school. In the next parent survey, the parents noted that the home economics program had improved! Even

though the data are not infallible, they do represent an important data source and they receive a good deal of attention.

The teacher surveys of data do not seem to receive as much attention. The main reason appears to be that the teachers have many opportunities to talk and discuss matters and to influence each other. Thus, f · the staff, the teacher surveys do not provide many insights or surprises. Probably, the teacher responses may provide some insights to the parent members of the school site councils and component committees but parents do not play as critical a role in the deliberations as does the professional staff.

In summary, we were impressed that these schools had a proclivity towards data and they valued a decision-making procedure that was really quite atypical of what would be found in most schools. The principals and staff were not able to (nor were they inclined to) dominate discussions and decisions. Parents and, where appropriate, students, had a real sense of efficacy and participation. The wall that sometimes separates the public from its schools had been broken down and a bridge of communication and mutual trust had been constructed in its place.

South District: Assessing the Impact of the District's Instructional Information System

This study is of a small district which has, over the past eight years, created a workable system by which teachers continally tailor their instructional practices to the learning outcomes of their students. The district has created a centrally-mandated, school-managed, classroom-operated set of procedures that ensure a quality education for children.

What is unique about South's system is not the idea itself. After all, personnel in most districts would say that quality teaching and learning is the primary business of the public schools. Also not unique are the individual components of the system. Testing, standard setting, text selection, staff development, district-wide curricula, school resource rooms, are common elements in most district settings. And what is unique about the system is not the many hard-working teachers, satisfied parents, high achieving students. These, too, can be found in many school districts.

The uniqueness of the system of instruction is that it is coordinated, pervasive, and self-renewing. A common orientation towards teaching and learning has become the customary way of life for students, teachers, principals, central office personnel, board members, parents and others in the community.

It was not always this way. In the late 60's, the school reform spirit in the country prompted South's central office to action. The years of trial and error in developing a testing system, the early contentiousness of school teachers and administrators about the curriculum, the initial expenditures of non-productive dollars have now become part of the district's folklore. Stories of these early days and of the personal toll they exacted form a background against which to understand present-day proud comments from teachers such as, "We're all overachievers." "I want my own children to go here." "We can catch incoming children up to grade level within two years." "The quality of our schools would go down without the district system. We are consistent from school to school."

The following account looks at the impact of South's instructional information system after a brief description.

DESCRIPTION OF SYSTEM

1. The criterion-referenced testing system. These tests, initially developed and continually revised by teams of teachers, are the major devices regulating instruction. The CRT tests, each taking no more than half an hour to administer, are given in each classroom three times a year, or more often at the individual teacher's discretion. Normally, teachers teach a unit of material in math, reading or language arts, then wait two weeks and give the test to their students. Test booklets may be scored by the teachers or may be machine-scored. In either case, the testing coordinator returns to the teachers' computer printouts with their students' scores organized by objectives and printed out by learning group. Printouts are also available by child, by class and by school.

2. The district continuum. All CRT tests are referenced to milestone objectives on a kindergarten-through-eighth grade instructional continuum for reading, language arts and math. The tests provide a gross diagnosis of student progress through each subject sequence. After teachers review the test results, they decide whether to move their instruction back or forward along the continuum. Each teacher uses the tests for a rough assessment of individual performance, that is, for projecting and measuring student growth on the continuum over the course of a school year. All teachers as a group work with the school principal to identify grade level instructional priorities according to student performance on the tests since the results allow teachers and administrators to determine the percentage of students performing below, at, and above grade level in a given subject area

The district scope and sequence for reading, language arts, and math is a graded set of objectives accompanied by suggested teaching methods. The continua contain more objectives than there are CRT tests. They are sequenced and constitute a minimum set of expectancies for children by grade level. The continua are filed in looseleaf books, well-thumbed and referred to continuously by all teachers.

3. The Professional Development Program. The Professional Development Program (PDP) provides teachers with the skills necessary to act upon the results of the CRT tests. The PDP is coordinated by a full-time specialist who either teaches all the courses or hires consultants to do so. In addition, some PDP courses are taught by district teachers. The program has evolved over time.

The PDP program, as well as teaching particular instructional techniques to all teachers, has developed for teachers and principals a common vocabulary in which to discuss children's learning. Clinical supervision of teachers by principals is made easier by a common frame of reference and a common understanding about desirable teaching strategies. Teachers and learning specialists, both of whom have gone through the same PDP program, have a set of methods for acting upon the results of the CRT tests.

4. Learning specialist. The learning specialist might in other school districts be called the vice principal. In South the learning specialist does not have either the administrative or the disciplinary functions generally associated with the vice principal role. The learning specialist is a master teacher who functions as a resource to teachers and makes it possible for teachers to act upon the diagnoses implied by their children's responses on CRT tests. The learning specialist brainstorms

with the teacher about instructional alternatives. More important, he or she provides extra instructional time, on a pull-out basis, for children who need it.

The learning specialist coordinates and facilitates the CRT testing, making sure that the tests are given, that the results come back on time, and that teachers review and act upon them. Additionally, the learning specialist provides, for new teachers and for new policies, in-service sessions about the functioning of the CRT system.

5. School principal. Principals are expected by the district to spend a good deal of time in the classroom. Principals regularly walk around the halls and drop into classes in addition to doing their formal classroom observations. The formal observation may either be invited, if the teacher is nervous or new, or requests it, or uninvited if the principal feels comfortable about doing it. The principal visits have an evaluative function: "I am the clout that backs up the learning specialist" says one principal. "I evaluate, the learning specialist helps."

Additionally, the principal, during the end-of-year planning days, meets with the teachers and discusses the expected progress of groups of students for the year. During the course of the school year, principals receive student scores and look them over for progress and "surprises." Teachers are held accountable for student performance -- not for having all children achieve all of the preset goals -- but for explaining deviations from teachers' earlier expectations.

Principals in South are themselves evaluated both informally and formally in conjunction with the amount of time they spend on teacher supervision and checking on students' progress.

Principals meet regularly with the superintendent. Discussion of student progress is a regular, periodic part of their agenda.

PURPOSE OF THE SYSTEM

All districts, when asked to describe the important features of their instructional programs will likely mention the goal of improving pupil achievement and they will insist that a major district practice is to individualize instruction to the needs of students who have differing skills and capacities. Most often, however, the attainment of this individualized instruction goal is left to the devices of individual teachers who work with minimal supervision behind their closed classroom doors. Some teachers are quite skilled at individualizing instruction -- some are not. While school districts might offer some supervision and occasional in-service training in how best to individualize instruction, the degree to which such individualization occurs is largely incidental to any school district effort or intervention.

Not so in South District. While South might resemble many other districts in regard to the expressed goal of improving pupil achievement through individualized instruction, it differs considerably in the extent to which the district actively involves itself in assuring that this goal is realized throughout the district. Teachers in each South District classroom are expected to individualize instruction as a result of a comprehensive instructional program that is directed by the district central administration, but that reflects the teachers' concerns and intents.

If asked to select one word to define the essence of this program, we would choose integration. The entire system is designed to integrate the

elements listed earlier, i.e., criterion-referenced testing system, district continuum, professional development program, learning specialists, and principals, into a tightly-coupled system that assures that teachers are skilled at individualizing instruction and are aware of the progress their pupils are making towards mastering the components of the school district's instructional continuum.

The school district, in integrating these five elements into a common program, provides the teachers with tools and concepts they can use in their classrooms. For example, they have a series of teacher-developed, district criterion-referenced tests the teachers can use to diagnose pupil achievement and, when appropriate, to prescribe remediation or change the instructional pace or method. Also the teachers are given intensive in-service training to provide them with the skills to meet individual pupils' varying instructional needs. Also the teachers and principals, and indeed the parents, are provided with a set of terms and methods that translate into a common language about the instructional program and the pupils' progress through the program. This reduces considerably the miscommunication and misunderstandings that are often found in many school districts.

Keeping the above in mind, the impact of this system should be measured by the extent to which classroom teachers consider that the system is useful to them in meeting the overall goal of enhancing pupil achievement through individualizing instruction.

IMPACT OF THE SYSTEM

When we began our impact inquiries in South District, we entered a system that had been developing and in operation for many years. From

previous visits we knew that the reading and mathematics parts of the program had been operating for many years. While we could ask "impact questions" about these two instructional fields we were unsure if our teacher respondents would be able to differentiate between the district instructional information system's impact and the extent to which current practices contained some unknown carryover from practices that predated the district's instructional information system.

In an effort to get as clear a picture as possible of how the instructional information system worked and its impact, we decided to select a recent addition to the system and measure its impact. We chose the district's new writing instruction program as the focus of our inquiry.

In a nutshell, the district had become aware that some parents and teachers were concerned that the schools were not adequately teaching the students to write creatively, clearly or accurately. After collecting criterion-referenced test data and visiting other districts and writing projects (one principal visited some British schools), the district decided to launch a comprehensive program to improve student writing throughout all grades. This decision was reached after considerable discussion and analysis which included principals, teachers and parents.

All of the system components were brought to bear on this project. Teachers helped develop a special criterion-referenced testing series; teachers also helped develop a district continuum of K-8 writing skills, which was built upon the Bay Area Writing Project; almost all the teachers have attended a voluntary inservice program that instructed them in the fundamentals of teaching writing, of diagnosing and treating student writing problems and motivating students to want to write creatively and

well. Learning specialists helped teachers with diagnostic problems and worked with small groups of students with common problems; principals visited classes often to assess the teachers' progress and to make programmatic adjustments where warranted.

One of the first questions we explored was the extent to which this program had been implemented. In a typical loosely-coupled school district it is not uncommon for the central administration or board to mandate a particular program and find, after some period of time, that the program had not been implemented as designed, or that it had been differentially implemented, that is, implemented in some schools or classrooms and not in others.

So, a first question we explored before trying to measure impact was the universality of implementation. After completing our field work, we were convinced that the district's writing program had been implemented in every elementary school in the district and in almost all the classrooms. There were some few teachers who did not participate in the program but their number was small. One can say with considerable confidence that the program has been implemented; parents can be quite sure that their children enrolled in the South School District will experience a comprehensive and sequenced instructional program in writing.

The teachers and administrators with whom we talked identified a large number of impacts. For the purpose of brevity we have reduced their comments into three categories: academic learning time, school climate and culture, and communications.

Academic learning time. Derived from the Beginning Teacher Evaluation Studies, this term means that pupils spend an adequate time on an

instructional task at a level that allows the student to achieve mastery and to be challenged to move, when appropiate, to higher levels of achievement. Once we sorted through all the teacher's comments, this theme emerged clearly. It was manifested in several ways, such as:

- The start-up time at the beginning of the year is greatly reduced because the teacher has criterion-referenced test results on each of the new pupils on each of the district continuum elements. After a brief check to see if the test results are accurate the teacher can immedately begin to work with students, at each student's appropriate level.
- The criterion-referenced tests, which can be administered and corrected in a short period of time, provide teachers with what they generally view as a valid measure of pupil progress. They can quickly see where the gaps are in pupil learning, and they can place students into temporary instructional groups with peers who have similar instructional needs.
- The teachers can be quite specific when talking to parents about the students' instructional needs and the kinds of home activities that will help students achieve mastery of the subject matter.
- The negative effect of having substitute teachers is diminished in this program. Substitute teachers can be provided with a rather specific individualized plan to follow with classes.

School climate and culture. Typically in elementary schools teachers work quite independently behind their classroom doors. To be sure they follow a general district pattern of studies, that is, a third grade teacher attempts to cover "3rd grade material." But the teachers are loosely supervised by the principal; the principal generally does not interfere with a teacher's activities unless it is plainly clear that the teacher is quite incompetent. It is difficult for the principal or other teachers to determine the extent to which individual teachers are meeting the instructional needs of individual pupils. One could, thus, characterize the culture of most schools as minimizing organizational cooperation. There is little sense of teamwork; the school does not work as an integrated whole.

In South District schools, one senses a much different culture and climate. With regard to the teaching of writing, the climate can be best described as teamwork -- as a group of teachers and a principal and learning specialist working toward a common goal in a common way. All the teachers teach writing in the same way and a teacher at one grade, say 4th grade, can be sure that the students have had a similar writing experience with their 3rd grade teacher. What is more, the fourth grade teacher can use CRT's in identifying specific knowledges or skills that each student may not have mastered in the previous year.

The relationship between the principal and teachers is also quite different. Principals visit classrooms regularly and have a common understanding with the teachers about what should be occurring in the classrooms. But the atmosphere or mood during these visits is not one of supervisor "checking up" on subordinates, but is instead one of a colleague who is interested in another's work. Principals do not report being concerned about teacher competency; the teachers have been carefully selected and trained by the school system, and they receive continuous feedback on their effectiveness.

What is more, the teachers have been, and continue to be involved in developing and refining the system in use. Thus, there is none of the kind of "sabotaging" that sometimes occurs when new instructional materials are implemented from the top without teachers' involvement.

Communications. Finally, an important impact of this system is the degree to which it eases communication among the various groups that make up a school, i.e., teachers, principals, supervisors, and parents. As has been previously noted, this system provides a common set of expectations,

methods and outcome measure. It also provides a common vocabulary. The effect of this on communications among teachers, principals and learning specialists is obvious: they can quickly understand each other and problems are easily placed in a familiar context.

One of the greatest impacts this common set of expectations and vocabulary has seems to be on the communications between teachers and parents. Instead of the more common teacher-parent conference where the parent is informed about the pupil's progress in terms of how he or she compares with other students or the level of effort the student is putting forth, South District teacher-parent conferences can focus on those skills and knowledges from the district continuum that the pupil has mastered or not mastered. At the beginning of each school year, the teacher and parent review the child's CRT results and a specific teaching and study strategy is mapped out for the coming year. The roles of the teacher, parent and student in achieving the desired goals are agreed upon and clearly understood. At subsequent conferences during the year the student's progress is noted and adjustments are made, if needed.

OTHER IMPACTS

Because this is a carefully designed, comprehensive system that has been fully implemented, there were few unexpected impacts. Those that were initially encountered, such as teacher resistance, have been ameliorated. The only impacts that appeared to be of any consequence were: time commitments, computer and measurement errors, and an inordinate number of intra-district transfers into South District.

Time commitments. Numerous teachers commented on the amount of time the CRT testing program took in their classes. However, they also noted

that the district no longer gave NRT's and thus the total time devoted to testing was perhaps not significantly greater than that which is spent on testing in other districts. The teachers who commented on the time commitment, however, also felt that the time was well spent because it resulted in data that helped them to check pupil progress and individualize instruction.

Computer and measurement errors. Many teachers observed that they must read the computer data very carefully because occasionally the computer results are erroneous. Also, the CRT's are not infallible. Students occasionally score considerably above or below their real level of competency. Usually, when this occurs, the teachers catch the error and either retest or use their own judgment in planning the student's instructional program. In short, this system, with all its sophistications, cannot totally replace teacher judgment in making instructional decisions.

Intra-district transfers. The state in which South District is located allows parents from one district to apply to have their children transferred into another district. Because of South District's reputation and its instructional program, the district believes that it has had an inordinate number of parents from surrounding districts who wish to have their children transferred into South District. This does not represent a problem -- it is merely an unexpected impact.

Summary

Having reviewed the impact of these two quite different instructional information systems, we will conclude with some final observations about

the similarities and differences between the two and what this tells us about measuring impact.

Differences. Clearly, these two systems are aimed at serving quite different audiences. North seeks to inform school site councils; South, the classroom teacher. North's system is far more indirect in its immediate impact on the classroom. Indeed, much of the impact may not have any direct measurable effect on individual classrooms and teachers. The two systems, quite expectedly, differ in the level and consistency of implementation. North District portrays considerable variation in the way and degree to which its system has been implemented. South District, on the other hand, is quite uniform and comprehensive in implementation from school to school. Finally, the two districts face different problems as regards the further implementation and development of their programs. North must address reasons for the differential implementation from school to school and seek to understand the reasons for this variation and, if necessary, consider strategies for overcoming undesirable variations in program implementation.

South, on the other hand, must assure that their program does not become a victim of its own success. That is, success sometimes breeds complacency which then results in the organization losing its drive and capacity to approach new problems with a fresh perspective.

Clearly, if a district is going to try to measure the impact of its instructional information system, it must make sure that it has a clear understanding of what the system is intended to accomplish, the degree to which the system components have been developed, and the conditions that allow the district to make reasonable progress.

205

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APPENDIX

Sample Interview Guides used in North and South District field site visits

Center for the Study of Evaluation
Evaluation Systems Project
Interviews/ /Principals/Learning Specialists

We are interested in your views about the District's testing, curriculum amd instructional system, how it functions and the impact of its operation on teaching. By this system, we mean . . . . . .

Let's take as an example, the teaching of writing (or math, reading) during this past year in the lower grades.

1. Can you describe how writing is supposed to be taught in this district?

2. What percentage of teachers do it this way? What accounts for those who do and do not teach that way?

3. In your view, what influence does each of the following components have on the teaching of writing?

   the district's scope and sequence
   CRT tests and feedback
   learning specialist
   professional development program
   media resources
   teacher evaluation procedures

4. Do these answers apply to instruction in math? in reading?

5. What difference would it make if the district no longer required the use of the scope and sequence, CRT's and PDP? First, tell me your own reaction. Then tell me what effect this would have on the schools in general.

6. (Next page)

(CONT.)

Center for the Study of Evaluation
Evaluation Systems Project
Interviews/ /Teachers

We are interest d in your views about the District's testing, curriculum amd instructiona! system, how it functions and its impact on teaching. By this system, we mean the tests and the district's scope and sequence.

Let's talk about your approach to instruction. Let's take writing (or math or reading).

1. Could you tell me how writing is supposed to be taught in this district?

2. Do you teach it in this way? Do most teachers? (Probe: what accounts for those who do and do not teach that way?)

3. How are you influenced in your teaching of writing by . . .

   the district's scope and sequence?
   CRT tests and feedback?
   learning specialist?
   professional development program?
   media resources?
   teacher evaluation procedures?

4. Do these answers apply to the way you teach math and reading?

5. What difference would it make if the district no longer required the use of the scope and sequence, CRT's and PDP? First, tell me your own reaction. Then tell me what effect this would have on the schools in general.

6. (Next page)

(CONT.)

6. I'm going to go through some impacts that the system might have on different groups of people. In your school, has the CRT/curriculum/PDP affected

IMPACT

teachers'

a. communication with one another? _____

b. communication with parents? _____

c. understanding of test scores? _____

d. use of test data in in making decisions about change _____

e. problem solving skills _____

x. other _____

on principals

f. awareness of student achievement _____

g. communication with staff _____

h. communication with parents _____

x. other _____

on parents

i. attitude toward district _____

j. knowledge of school programs _____

k. attitude toward school _____

x. other _____

on students

l. learning progress _____

m. attitude toward school _____

n. relationships with peers _____

o. relationships with teachers _____

p. relationships with parents _____

q. feelings of accomplishment _____

x. other _____

Name _____ School [illegible] Position _____

Center for the Study of Evaluation
Evaluation Systems Project
Interviews/*

We are interested in your views about your school's School Site Council, how it functions, and the impact of its decisions on the school and community.

I understand you were on the SSC last year. I would like to discuss both how the SSC functioned and to get your assessment of the impact the SSC's decisions have had on the school this year.

1. I understand the SSC decided last year to . . . . . .

   How did you come to be working in that area?

   What evidence did you have that led you to consider this as an area for SSC action?

   What was the sequence of events that led to the SSC's final decision?

   test data used? survey data used? process used?
   committee consideration? subcommittee work?

2. What happened as a result of that decision by the SSC?

   How did people become aware of the decision?

   What did people do about the decision? Why?

   How do you know?

   What have been positive and negative impacts of this decision?

3. Is this typical in its process? In its impact? Explain.

4. Generally, of what use to the SSC are a) the test data, b) the survey data, c) the district decision-making process, d) district training?

5. Suppose that the district decided to discontinue collecting survey data and giving you test data. What would your reaction be?

6. What difference do you think it would make if the district's system supporting the School Site Council were discontinued?

7. (See next page)

*with principals, SSC teacher and parent particiants

7. I'm going to read a list of impacts that a SSC might have on different groups of people. In relation to your own school situation, how would you characterize each?

IMPACT	None	Positive			Negative			Don't Know
		a little 1	2	a lot 3	a little 1	2	a lot 3	
On teachers								
a. communication with one another								
b. communication with parents								
c. feelings of efficacy								
d. understanding of test scores								
e. understanding of community attitudes								
f. use of data in making decisions								
g. problem solving skills								
x. other								
On principals								
i. management skills								
j. budgeting skills								
k. sense of fiscal accountability								
l. awareness of student achievement								
m. communication with staff								
n. communication with parents								
x. other								
On parents								
o. awareness of schools' problems & efforts to deal with them								
p. knowledge of school programs								
q. attitude toward school								
x. other								

Name _____ School _____

Role _____ VOS _____

Interviewer_____ Date_____ Time_____

Name of Respondent_____ School_____

Role_____ Length of time in SSC_____

[Interviewer's Record of Responses]